

# Conservation

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

VOL. VI.

MARCH, 1917

No. 3

## Employment in Forestry

### Opportunity to Provide for Many Returned Soldiers

In solving the problem of providing suitable employment for returned soldiers, the possibilities in forestry and fire protection work should not be overlooked. For many of these men, such work would be highly attractive. In carrying out a plan for the establishment of vocational schools for the training of returned soldiers, provisions should be made in some way for special courses of instruction in forestry work. Such courses should be of the most practical character, calculated to make the services of the men of great value to Dominion and provincial forestry and fire-protective organizations, and to private timber owners as well.

Technical forest schools are already in existence at Toronto, Quebec and Fredericton, and another is contemplated at Vancouver. It should be possible to secure the co-operation of these schools in the establishment of supplementary ranger schools, specializing primarily in the several classes of forest engineering work which would best fit the men for the practical duties with which they would be confronted in the lines of government or private employ. Another possibility is the establishment of such courses of instruction direct by the several governmental fire protective organizations, Dominion and provincial. Each of these should be able to provide employment for quite a number of returned soldiers, with great mutual advantage, providing the men are properly trained.

### FUR PRODUCTION IN CANADA

Canada's rich resources in fur-bearing animals formed her earliest commercial attraction, and, through generations of energetic exploitation, the fur industry has occupied an important position in forestry production. Of recent years it has become increasingly evident that the permanent preservation of this source of wealth demands the much more rigorous

protection of fur-bearers. One of the essential requirements is the collection of accurate statistical data of fur production from year to year, as a reliable index to the increase or depletion of our resources. Such a system is already enforced in several provinces, where trappers and fur dealers are licensed and compelled to make annual returns as to their operations. Similar measures should apply to every important fur producing region of the Dominion.

## Prevention of Coal Shortage

This winter we have had a coal "famine" and that suffering has accompanied the shortage of this necessity is undeniable. The average citizen has a notoriously short memory, but now is the time to impress upon him that, in many cases, the suffering was due to lack of foresight. In Canada many people buy in small quantities—often only one ton. If, for any cause, there is a shortage of coal, imprecident house-holders demand that the coal dealers do the impossible, namely, that they supply fuel that is unobtainable. Where, as, had they purchased their coal in the summer or autumn, there would be ample supplies available.

While some large consumers, such as manufacturers, can not store a six months' supply, most householders can, with their present bins or with enlarged bins, store coal to meet their requirements till March or April.

In recent years, we have had two coal "famines", first in 1901-02, the year of the coal miners' strike, and, second, this year, when the severity of the weather and the extraordinary prosperity in the United States caused an unprecedented congestion of freight. A survey of conditions in the United States demonstrates that in the future there will be more coal "famines" than in the past and that they will occur at shorter intervals. For this there is only one remedy:

**BUY YOUR COAL IN THE  
SUMMER IF YOU HAVE NOT  
SUFFICIENT STORAGE, EN-  
LARGE YOUR COAL BIN.**

## The Iron and Steel Industry

### Greater Efforts Should be Made to Utilize Canadian Ore

Although iron ores are widely distributed in Canada, the present extensive metallurgical industry in iron and steel has been developed largely on the basis of imported ores, chiefly those from Bell Island, Newfoundland, and from the iron ranges in the United States, south and west of lake Superior. Each of these sources contributes about one-half of the present imports. There are, nevertheless, several important Canadian iron ore deposits that have contributed considerable outputs in the past, and there are numerous occurrences of low grade ores, which, in the future, may constitute valuable sources of supply for this metal.

With regard to Canada's known reserves of ore, an estimate of iron ore deposits, upon which more or less work has been done, shows total known available reserves of about 200,000,000 tons. The great bulk of these ores, however, consists of low grade magnetites and siderites requiring concentration, or desulphurization before being marketable.

The actual ore production has averaged less than 400,000 tons per annum, much of which has had to find a market in the United States, not being acceptable to the Canadian furnacemen. The blast furnace capacity in Canada is about 1,500,000 tons per annum, whereas actual production has exceeded 1,000,000 tons in one year only. In 1913, Canada consumed over 3,000,000 tons of iron and steel goods of all kinds.

Not only is Canada dependent on foreign imports for 75 per cent of her iron and steel requirements but even the iron ore which is manufactured into steel in the Dominion comes from outside sources.

To utilize Canadian ores of which the known reserves amount to about 200,000,000 tons, it is evident that steps should be taken to encourage the smelting of these ores in Canada.—W.J.D.

## Growing Too Many Varieties

### Great Advantage in Sowing Tested and Recommended Varieties

Four hundred farmers in Dundas county, Ont., were visited by the Commission of Conservation in 1916. Among the 53 per cent who knew the names of the varieties of oats sown, there were 14 different varieties found. In another county in Ontario, on 100 farms visited in a previous survey 28 varieties were found. These great numbers of varieties are very undesirable. Many of them are not suited to the district in which they are grown, and many are inferior sorts which have been bought by the farmers just because they were new or were different from what was being grown by the neighbours.

Farmers will find it much to their advantage to sow the varieties which have been tested and recommended by the Experimental Farms or Agricultural Colleges. These institutions have excellent facilities for conducting seed tests. Where 14 varieties are being sown in one community probably 13 farmers are not sowing the most desirable. A great increase in production and profits would result if fewer but more suitable varieties were grown on Canadian farms.—F.C.N.

### CONSERVATION ENDORSED

At the annual meeting of the American Paper and Pulp Association, the following resolution was adopted: Whereas, the members of the American Paper and Pulp Association are directly interested in wise conservation of our forests and the proper utilization of our water-powers; therefore be it

*Resolved*, That we do hereby again this year, as last, assure the American Forestry Association, and all other organizations interested in conservation, of our hearty co-operation for the advancement of a wide conservation policy which alike recognizes public and private rights.

## Precautions with Electricity

All Conductors Should be Treated as "Live" Until Definitely Known Otherwise

The installation, maintenance and use of electrical equipment and appliances involve an element of danger not encountered in other lines, and the performance of such work requires the exercise of extreme care to avoid difficulties. Safety demands that the electrical worker be constantly alert, especially where high potentials are handled, and that he possess a knowledge of the fundamental laws of electricity.

Electrical conductors carrying current and those not carrying any are identical in appearance. This fact alone emphasizes the importance of treating all conductors as "live" until the contrary is definitely shown. Elementary technical education and industrial training would prove of great value to electrical workers. While a great majority of electrical accidents are not due to ignorance of danger, the carelessness sometimes shown could be eliminated by teaching the workman every detail as to the source and nature of the danger. Unsafe "shortcut" methods are often employed by incompetent men, whereas there are safe and equally quick ways of performing the same work.

Most of the appliances and wiring are practically "fool-proof", but not always proof against the knife and screw-driver of the amateur electrician. The appliances usually remain perfectly safe until some unmistakable evidence shows that something has gone wrong. This may be a blown fuse, flickering lights, difficulty in turning the current on or off, sparking, or apparent total absence of current. In all cases, unless one is certain of the cause and knows how to remove it, a competent man should be called before serious trouble or accidents develop. In handling electrical appliances or wires, one should not stand on or touch any metallic, wet or damp object, as this may be in contact with the ground. A particularly dangerous practice is to turn an electric light on or off with one hand while the other is in contact with a tap or telephone or other metallic substance or while standing in a bath or while wet from a bath. There is very little danger when one stands on a dry, wooden floor or carpet. Most of the accidents reported happen in damp cellars, bathrooms, or near taps, pipes, etc.—L.G.D.

In spring, gather up the bones which have accumulated during the winter and bury them at the roots of trees, bushes, etc. They make excellent fertilizer.

## School Life and Schools

Greater Attention Must be Paid to Making Schools Attractive

Impressions made upon the young mind are lasting. This is especially the case in school life. Psychologists agree that, until about twelve years old, boys are entirely taken up with their own interests and have not begun to

of their wives attended public school only. Their education, therefore, must have been completed at an early age. Thus the impression created by their public school surroundings must be indelibly written upon their minds and remain there during life. Every consideration, civic and individual, renders it essential, therefore, that school conditions be made agreeable and that the teacher be suitable to the work. Greater attention must be paid to making our schools attractive, to bring the scholars to



Cut No. 153

Initiative and a little effort would make this school attractive.



Cut No. 154

Originally a good school building, but neglect is now its principal feature.

recognize the need of group efforts. It is, therefore, in the early age that the child forms his individual opinion of the school and teacher. In later life his interests become more associated with his school fellows, and this memory offsets any deleterious effect which an unattractive school may have caused.

According to a recent survey of educational conditions in the county of Dundas, Ont., by the Commission of Conservation, 98 per cent of 400 farmers and 92 per cent

them, and make life pleasant for them while there. We are continually urging greater and higher educational facilities for our children, but are we making the best use of existing opportunities? A prime requisite to this end is initiative on the part of the teacher. In his or her hands much needed improvement can be made in building and grounds. Any expense entailed can readily be secured, if not by direct collection from the parents, through the medium of

## Smut in Grains

Its Presence Means Loss of Millions of Dollars to Canadian Farmers

One way to increase production on Canadian farms is to prevent the loss caused annually by smut in cereal grain. An average loss from smut of one per cent of the crop means a loss of millions of dollars to the farmers of Canada. Losses have frequently run from 10 to 40 per cent on individual farms.

Agricultural surveys conducted by the Commission of Conservation have shown that a very small percentage of the farmers in the five eastern provinces treat their seed grain for smut, while among farmers in the prairie provinces the practice is general. It pays the western farmer to treat his seed and it will also pay the eastern farmer.

At a farmers' meeting recently held in Western Ontario, one farmer stated that he had purchased seed wheat which had little "bunt" or stinking smut on it, but thought it was not worth while treating it. As a result he had badly smutted crop, causing a decreased yield and disagreeable threshing, and he was docked 25 cents per bushel when he marketed it.

The formalin treatment of stinking smut of wheat and seed of oats is effective and easily applied. The formalin is mixed with water at the rate of one pound of 45 gallons of water, and the grain is either immersed in the solution or sprinkled with it until every kernel is thoroughly wet. The grain should then be placed in pile and covered with sacks or blankets for several hours, or overnight. It should then be dried sufficiently to run through a seeder. Care must be taken to prevent the treated grain from coming into contact with sacks or blankets or floors upon which the grain may be smut spores.

When the treatment has been properly performed, treated seed will practically always give better yields than untreated seed. Try for yourself with your seed in 1917.—F.C.N.

some form of entertainment and it is not hard to arouse the enthusiasm of the pupils in such undertakings.

The two schools shown here are typical of many. What there is of selections of his school days could they carry through life from natural surroundings?

In each case, however, the Government the nucleus of a good school. Without of a progressive teacher, the necessary national improvement to the surroundings, if it could be made at minimum expense and conditions created without parents would provide pleasant memories throughout the pupil's later life of United

## Commission of Conservation CANADA

SIR CLIFFORD SIPLETON, 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 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 in clipping for reproduction.

OTTAWA, MARCH, 1917

### NATIONAL CONTROL OF NATURAL RESOURCES

The experience of the Great War teaches us its clearest lesson that national efficiency in peace, no less than in war, depends directly on the wise common control of the natural resources, which are the basis upon which all human welfare necessarily rests. The nations of Europe are turning with one consent to the control of their supplies of coal, iron, copper, timber, oil, and water-power by all the people through their government for the common defense and for the common good. . . . Our natural resources must be retained in national control. We see now, more clearly than ever, that natural resources are the foundations of national efficiency and defense. The Great War has proved definitely that coal, oil, timber, and other resources are as important in modern warfare as men and arms. Water power in particular ought to be kept in the public hands, because it is a vital necessity in the production of nitrates and without nitrates high explosives cannot be made.

In addition, we know that if there is "an economic war after the war", the national control of natural resources will be a fundamental essential to this nation. Government control of the natural resources of wealth is necessary if our nation is to be industrially efficient, if it is to be prepared either for war or for peace. There is a widespread patriotic trust just ahead of us.—Gifford Pinchot, President of National Conservation Association, United States.

## Barn Fires

Lack of Windows an Incentive to Dangerous Practices

In any statement of buildings destroyed by fire, barns and stables occupy a prominent place. One of the chief reasons for this is the necessary use of lanterns and other lights. In many barns artificial light must be used at almost all hours, with the resultant element of danger.

The illustration herewith shows a splendid farm building, well built and kept in good condition, with the surroundings neat and tidy. It is, however, lacking in one

of Halifax, demonstrates that mink can be successfully bred in captivity.

In the spring of 1914, I decided to try if some success could not be attained with this highly nervous and delicate animal, and bought two pairs from a rancher. As one of these had been injured when caught it died shortly afterwards, but after some difficulty I was able to purchase another female. In the spring of 1915, I had fourteen live minks, but unfortunately on account of not separating the young of one of the families from the mother soon enough, I lost the mother. In the spring of 1916 I



Cut No. 155

Daylight has been shut out of this barn, making it necessary to use artificial light, which is often supplied through the dangerous practice of lighting matches.

essential—sufficient windows to provide light for the interior. With closed doors this barn would be almost completely dark, and hence the incentive to light a match. There is nothing more dangerous than a lighted match in a barn, with, probably, loose straw or hay on the floor, and everything as dry as tinder.

Daylight is one of the cheapest of our natural resources, and it is easily transmitted. While making use of daylight, farmers will at the same time remove a very serious element of fire danger—a cause of fires in barns and stables which can only be charged to pure carelessness.

## Mink Farming

These Valuable Fur-bearers Can be Successfully Bred

While fox ranching is the most important and best known branch of domestic fur production, the rearing of various other valuable fur bearers will probably occupy a prominent place in future fur-farming development. The experience of Mr. E. L. Macdonald,

had forty-six to take care of, and, profiting by my experience of the year before, was able to save all of them and this year, with no bad luck, I will probably have one hundred animals.

If their surroundings are at all natural, with the proper care in feeding and a little judgment in the mating season, I can see no reason why anyone so inclined, cannot raise mink both profitably and as a pastime.

I find the ranch-bred mink are more contented and much larger than the wild ones, and believe the regular feeding is conducive to better fur; being larger, of course, the animal is more valuable from every standpoint. The dens should be large enough for them to play in, and as natural as is possible, although they are animals that do not require any luxuries if their house is dry and clean.

It is estimated that the consumption of lumber for the making of phonograph and other talking machine cabinets in 1916 was 75,600,000 square feet of manufactured hardwood lumber and 50,000,000 square feet of veneer.

## The High Cost of Delivery

The result of a preliminary survey by the United States Census Bureau has shown that "For four important classes of commodities—coal and wood, milk, ice and department-store merchandise—which together represent a very considerable proportion of the cost of living, the expense of delivery or cartage one way constitutes, on the average, more than 8 per cent of the total cost to the consumer. The percentages for the individual commodities, however, vary greatly from this average. For department-store merchandise, the delivery expense, as indicated by the data so far obtained, represents less than 2 per cent of the selling price; for milk and dairy products the corresponding proportion is 12 per cent; for coal and wood, 19 per cent, and for ice, 45 per cent."

So costly has become the item of cartage and delivery that "in the case of many articles of food, the amount received by the producer is only one-half or one-quarter, or less, of the price paid by the consumer, and it was the belief, borne out by the result of the preliminary enquiry, that the item of city cartage alone would be great enough to justify calling attention to the very large sums that the community is called upon to pay in maintaining the wasteful and highly complex systems of individual delivery which characterize retail distribution at this time."

## INDUSTRIAL TRAINING

Every year, more than 2,000,000 children and youths are recruited in the United States and Canada to industrial and commercial enterprises. School statistics show that 75 per cent of the children who enter school leave between 14 and 16 years of age to work in mills, factories and stores.

The percentage going to work at this age with definite training is negligible. These young recruits to industry are employed in highly specialized tasks. Drifting from job to job, in later years, many settle down to become handy men and unskilled labourers. Hardly one in a hundred ever obtains a chance to become a skilled worker or master of a trade. What wonder that employers bewail the shortage of skilled workers and that the labour market is overstocked with thousands of unskilled workers.

To meet this situation Canada must provide some form of technical training whereby all who enter agricultural or industrial occupations shall be provided with at least the preliminary elements of vocational training.

## Fire Conditions in Hospitals

### Many have not Adequate Means of Escape in Case of Fire

Many Canadian hospitals and similar institutions lack adequate means of escape in case of fire. Many are situated at a considerable distance from the protection of municipal fire departments and are entirely dependent upon their own resources and equipment. Inmates incapacitated by illness, the blind and imbecile are practically helpless in an emergency. A fire starting in the basement or upon the lower floors would, in many cases, cut off descent by the ordinary stairways and elevators. If unassisted, rapid exit down external fire escapes is obviously impossible to the bedridden and crippled.

To overcome this vital defect it has been suggested that every hospital, asylum and public institution introduce a fire resisting wall, cutting the entire building into two parts. In case of fire breaking out on one side of the wall, automatic alarm signals would notify everyone upon that side and they could pass through the doorway of the wall into the safe section of the building and reach the ground, if necessary, by elevators or stairways which would be in a normal condition. With proper fire drill, the attendants would, at the first alarm, wheel the helpless on their beds through the doorways in the dividing wall with scarcely any disturbance. Safety would be found upon each floor, without the danger attending vertical travel.

The most attractive feature of the bi-sectional wall is its cost compared with structural alterations necessary in providing new stairways and unsightly and dangerous external fire-escapes. In many cases, existing walls can be developed into fire barriers with very little expense. The Department of Charities and Corrections of New York city has recently had the system installed complete with automatic alarms in each of the two hundred buildings under its control. The authorities responsible for the welfare of inmates in large institutions in Canada should give the matter consideration and, as far as possible, adopt this simple method of safeguarding the lives in their keeping from the dangers of fire.

The annual report of the Ottawa Chapter of the Daughters of the Empire states that since that organization undertook the collection of waste paper, in July, 1915, their receipts from this source have been \$9,246. The expenses of collection were \$1,204, leaving a net profit of \$8,042 for patriotic purposes. Over 550 tons were gathered.

## KNOW THE VARIETIES YOU SOW

During the summer of 1916 the Commission of Conservation conducted agricultural investigation work on 400 farms in Dundas county, Ont. It was found that nearly all the farmers were growing oats and barley. Of those growing oats, only 53 per cent knew the names of the varieties they were growing and only 13 per cent in the case of barley.

When a farmer is sowing an unknown variety of grain, he cannot be certain that it is the most suitable for his farm. Many farmers to-day are sowing a mixed crop of oats and barley and do not know the name of the variety of either. When late maturing oats are sown with early maturing barley, the barley will ripen first and before the oats are ready to cut many heads will break down, with a consequent loss of barley on account of the broken down heads.

The farmer should know the varieties he sows. This will enable him to select for mixed crops the varieties which will ripen together and give him best results. Every farmer should know the name of each variety of crop grown on his farm, and, in each case, it should be a variety of proven merit.—F.C.N.

## FARM SCHOOL FOR WOMEN

From Argentina comes information of a new departure in agricultural education. By a decree of May 8, 1915, the Government accepted the donation of grounds, buildings, etc., for the foundation of a farm school for women at Tandil, Buenos Aires, known as the Hogar Agrícola Ramon Santamarina.

The courses include practical and theoretical instruction in tree and plant culture, dairying, pig and chicken raising, general and special farm problems, and domestic economy. The course lasts one year and students receive a certificate. The entrance requirements are good health and a sixth-grade certificate. Applicants for enrollment must have reached the age of 17.

## SPAIN PROVIDES FOR NATIONAL PARKS

The Spanish Government has enacted a law providing for the creation of national parks. All exceptionally picturesque regions, forests or lands that the State may select for this purpose are to be considered part of the park system. Access to them will be facilitated by suitable means of communication. The natural beauty of the parks, their fauna and flora, as well as geological or water features of interest, will be protected from destruction, deterioration, or defacement.

## By-Product Coke Ovens

### Growth of Plants in Canada—An Important Example of Conservation

The Dominion Iron and Steel Company has recently ordered a battery of 120 Koppers by-product coke ovens of 13 tons capacity each. This company was the first to install by-product ovens and on the completion of the new plant will have a total capacity of coking 4400 tons of coal per day. The Nova Scotia Steel and Coal Company has also increased the capacity of its plant by an additional battery of 40 Bernard retort coke ovens. These ovens recover the gas as a by-product.

The coking of coal in by-product ovens is one of the most practical examples of conservation. All of the valuable constituents of the coal are saved—not wasted as in "beehive" oven practice. The by-products obtained are as follows: tar, from which is obtained pitch, creosote, carbolic acid, etc.; gas, used for fuel for heating or illuminating purposes and from which are produced benzol, toluol, etc., the raw materials used in the manufacture of aniline dyes and certain kind of explosives; ammonia liquor for the manufacture of ammonium sulphate, which is valuable as a fertilizer. The coke is used for smelting purposes.

The coal-briquetting industry depends upon a cheap supply of binding material. Coal tar pitch makes a suitable binder, and the manufacture in large quantities of this product in Nova Scotia should tend to encourage this industry and thus reduce the waste of slack coal. It would also make available many inferior coal seams, the coal from which could not be economically marketed otherwise.—W.J.D.

## Calcium Cyanamide

### Valuable Fertilizer Manufactured from the Air

Calcium cyanamide, contains about 2 per cent of nitrogen and on most soils has about the same fertilizing value as ammonium sulphate. Its nitrogen, therefore, is highly available and its use is especially advantageous on acid soils. The first step in its manufacture consists in the production of calcium carbide which is made by heating a mixture of coke and limestone in an electric furnace.

The only plant in North America manufacturing fertilizers in which the nitrogen content is derived from the air is that of the American Cyanamid Co., Niagara Falls, Ont. This plant was established in 1909 with a capacity of 12,000 tons per annum; this was increased during 1912 to about 32,000 tons, and

its present capacity is 64,000 tons per annum. The electric energy continuously used at the plant is approximately 30,000 h.p.; the greater portion of which is used in the manufacture of calcium cyanide.

Calcium cyanamide may be put to numerous uses but the fertilizer market has, so far, absorbed the entire output of the plant. Practically the whole production of the plant is exported to the United States. Exports to the United States were as follows:

1909	1,450 tons
1910	4,650 "
1911	9,500 "
1912	11,100 "
1913	27,400 "

This material was used in the manufacture of so-called complete fertilizers. In 1914, the average value of Canadian cyanamide exported to the United States was \$51.40 per ton.—W.J.D.

## Extension of Forest Protection

The completeness and efficiency of forest protection work in western Quebec is to be very greatly increased as a result of action decided upon at meetings of landholders held in Ottawa, February 21 and 23. As a result of this decision, the territory of the Lower Ottawa Forest Protective Association is to be extended westward to cover the area between the Colonge watershed and the western boundary of the province, extending north to approximately the National Transcontinental railway. The present territory of the Lower Ottawa Association covers the Lièvre, Rouge, Gatineau and Coulonge watersheds, a total of 13,269 square miles. With the increased territory now to be added the area will be approximately 29,000 square miles. An adequate staff of fire rangers and inspectors will be provided under the supervision of the present manager, Mr. Arthur H. Graham. It is anticipated that a co-operative arrangement will be made with the Provincial Government providing the patrol of unlicensed Crown lands, in addition to the large areas of valuable timber limits now being under license.—C.L.

The Russian Minister of Agriculture has been given power to create on Crown lands reserved areas for the preservation and breeding of fur-bearing animals and of birds.

Under a new factory law which recently went into effect in Japan the maximum number of work hours per day provided for laborers is twelve. It is expected that the new law will greatly alleviate the conditions under which 2,000,000 girls work in the silk producing factories.