

# Conservation

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## Protecting Our Feathered Friends

### Increase of Destruction by Insects due to Decrease of Insectivorous Birds in Canada

In any discussion of the protection of bird life in Canada, considerable opposition has always been manifested by the agricultural interests. It is claimed that birds are responsible for great damage to maturing fruits, berries, tomatoes, etc., and, earlier in the season, to the seed planted in the ground. This is true to a certain extent. But, as in the study of any subject, there are two sides to the bird protection question. The damage to the fruit is visible to the eye of the grower, and he consequently makes wroth.

The other side of the subject is one with which the agriculturist is less familiar. Could the birds take their daily food before those hostile to them, it would readily be seen to what extent they serve the interests of those who are dependent upon the products of the soil.

An analysis of the contents of the stomachs of thousands of birds has shown that 90 per cent. of the food consisted of insects and 10 per cent. of vegetable matter. Inwards of 5,000 insects have been found in the stomach of one bird. It has been estimated that the destruction by insects in Canada amounts to approximately fifty million dollars annually. Last year the tent caterpillar was very prevalent; this year the army worm

made its appearance and is doing great loss to the farmers in certain sections. It is known that, with the decrease in the number of birds which annually breed in Canada in the spring, there has been a constant increase in the destruction by insects. It has also been stated that, if all birds were destroyed, seven years would see the end of vegetation in Canada. This has been the reason for an active campaign for the protection of birds. The United States Congress has passed an act for the protection of migratory birds, and interested parties are bringing the matter before the attention of the Canadian Government.

Apart altogether from the practical view of bird life, there is the sentimental side. What would

TO EDITORS—Newspapers are invited to give prominence to the following, as this is the usual season for forest fires.

## Rules for Care with FIRE in the Woods

IF EVERY PERSON STRICTLY OBSERVED THESE SIMPLE RULES, THE GREAT ANNUAL LOSS BY FOREST FIRES WOULD BE REDUCED TO A MINIMUM

1. Be sure your match is out before you throw it away.
2. Knock out your pipe ashes or throw your cigar or cigarette stump where there is nothing to catch fire.
3. Don't build a camp fire any larger than is absolutely necessary. Never leave it, even for a short time, without putting it OUT with water or earth.
4. Don't build a camp fire against a tree or a log. Build a small one where you can scrape away the needles, leaves or grass from all sides of it.
5. Don't build bonfires. The wind may rise at any time and start a fire which you cannot control.
6. If you discover a fire, put it out if possible; if you can't, inform the nearest Forest Ranger or Fire Warden as quickly as you possibly can.

Canada be like without our feathered friends? If we could no longer look forward to the arrival of the first spring robin, or of the wren of the wild canary, something would be missing from our lives which we could not replace.

This is a subject which should engage the attention of school boards and teachers. The pupils should be taught to protect our feathered friends and their nests. The Boy Scout movement has taken up the protection of bird life and in their hands good work is being done.

## Homes for Workingmen in Suburbs

Toronto Housing Co. will extend its Work to the Cheap Lands in the Outskirts of City

The Toronto Housing Company, having practically completed its building plan originally laid out for work within the city, to supply

homes for workmen, is now arranging to extend the scope of its activities. Under the Housing Act of the Province of Ontario, 1913, the City of Toronto guaranteed the bonds of the Housing Company, with a restriction that the money be expended within the City of Toronto. Experience has, however, demonstrated that there is a greater field of usefulness in the utilization of cheaper lands outside of the city limits. The Housing Company believes that, by acquiring cheap lands and leasing to the workman or home-builder, and then either building or assisting him to build a home for himself, under proper housing and sanitary regulations, it will be able to do more to solve the housing problem than by building within the city. In order to permit this work to be carried on outside the city limits, the Toronto City Council has consented to the removal of the restriction on the field of operation originally contained in the company's charter.

## TO NEWSPAPERMEN

To further public interest in conservation subjects, the Commission will lend to Canadian journals the cuts used in this bulletin.

As there are only a limited number of these cuts, delays are sometimes unavoidable, but orders will always be filled as soon as possible after receipt of application. It is requested that cuts be made use of at the earliest possible date, and returned promptly, enclosing note showing by whom sent. We shall be pleased to receive copy of publication in which the illustration appears.

As the Post Office Department will no longer permit the franking of cuts, the Commission of Conservation will pay the postage on out-going packages or, the understanding that publications requesting the use of cuts prepay return postage.

## Financial Aspects of Fur-Farming

Continued Growth of the Industry—Dangers in Company Promotion to be Avoided

Phenomenal as was the development of the fur-farming industry in 1913, the present year, in all probability, will easily outstrip it. Scores of farmers throughout Canada, and especially in the Maritime provinces, are commencing the breeding of fur-bearing animals. Heavily capitalized companies are being organized on every hand for a similar purpose, although it is now three years since the industry entered upon its first boom. This unusual condition is due, in part at least, to the fact that capitalization values are at present based on stock for breeding purposes, but it can only be a question of time before values are reduced to a pelt basis. Moreover, the extensive importation of wild-fox stock into the Maritime provinces stimulates and maintains the interest that is being taken in this form of investment. The danger of over-capitalizing such untried stock should be, and doubtless is, discouraged by those having the best interests of the industry at heart.

It is worthy of note that at the March sales of C. M. Lamson & Co., the London fur dealers, very little demand was found for black fox skins. To quote the company's report of the sale: "A feature of the sale was the entire absence of the demand for black (fox) skins, which in many instances brought less than former values."

"This is a serious matter to the breeders of black foxes in eastern Canada, as values will assuredly be lower when the supply of this class of skins is largely increased."

It is unfortunate that some form of commission, such as exists in Manitoba, is not to be found in each of the provinces, to check and prevent questionable promotions which bring into disrepute an otherwise legitimate and profitable industry.—A. D.

Only a few years have passed since it first dawned upon a people who had revelled in plenty for a century that the richest patrimony is not proof against constant and careless waste; that a nation of spenders must take thought for its morrow or come to poverty.—James J. Hill.

## Water Supply is All Important

Advantages of the Drilled Well—  
Artesian Wells of Alberta

The importance of pure water supply upon the farm or in the smaller centres of population can not be over-estimated. Where, on the farm, a well can be dug sufficiently distant from any danger of pollution and in a location sufficiently high to overcome the possibility of surface water entering, this style of well is to be preferred to the drilled well. The occurrence of such favourable conditions; however, is so unusual as to necessitate the almost general use of drilled wells. The latter, as a rule, are more easily put down, and can be carried much deeper. They are cased with piping, and a safe joint made at the top with the pump, or in the case of a flowing well, with a faucet. This lining of the drilled well precludes the entering of any pollution, and, extending as it does for a considerable height above the surface, avoids any danger from surface water.

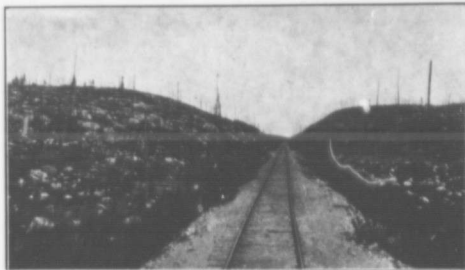
On the farm of Mr. Jos. Boisvert at Cluny, Alberta, an artesian well has recently been struck at a depth of fifty feet. Mr. Boisvert states that he drilled the well with a 1½ inch pipe, and, with a ½ inch faucet attached, he has secured sufficient pressure to send a stream twenty feet into the air. He also states there are quite a number of these flowing wells in his district.

## Forest Reservations in United States

Good Progress Being Made in the Work  
of Securing Lands for  
the Purpose

The lands approved for acquisition by the United States government for national forest purposes in the east, since the purchase policy was inaugurated in 1910, now total 1,104,000 acres, representing a purchase price of \$5,500,000. About \$2,000,000 of the original appropriation remains available for further purchases in the fiscal year 1915. The lands favourably acted on to date include 133,000 acres in the White mountains of New Hampshire, while 971,000 acres are located in various parts of the southern Appalachians, from Virginia to Georgia. Nearly 400,000 acres were approved for purchase during the past year, at an average price of \$4.96 per acre.

The first object of administration is to protect the forest against fire, for the twofold purpose of steady stream-flow and increasing timber production. There is, however, provision for all forms of use of the forests not detrimental to their permanent value as sources of timber and water supplies.



Cut No. 70 The Effect of Repeated Forest Fires  
Merchantable timber and young growth utterly destroyed. No seed trees left to establish a new forest. The fertile upper layer of soil consumed, followed by erosion of the mineral soil. A barren desert. Typical of large areas in eastern Canada.

## Cut-over Timber Areas Unprotected

The Young Growth should be Cared for  
in the Interests of the Future—  
Revenues will suffer

Thousands of square miles of non-agricultural lands in eastern Canada, suitable only for timber production, have been so completely devastated by repeated fires that the forest growth has been utterly destroyed. Almost everywhere, the efforts at forest fire protection are concentrated upon the remaining areas of merchantable timber, while the cut-over lands are, for the most part, neglected. As a natural result, the future forest revenues of the several provinces are seriously jeopardized, since it is inevitable that the financial returns from the cutting of virgin timber must decrease through the gradual exhaustion of these supplies, leaving the balance to be secured from operations on lands previously cut over. Not only will there be loss in prospective stumpage dues but in ground rent also. Lumbermen are not so devoid of business judgment as to continue paying ground rent, after the removal of the virgin crop, upon lands so completely ruined by fire that there is no young growth left to assure a future profit through retention of the limits. As a matter of fact, the tendency toward the abandonment of cut-over timber limits is almost universal in some sections and will certainly continue and increase unless fires are kept out.

Repeated forest fires not only destroy the young growth, but the seed trees as well, thus preventing the reproduction of the more valuable species. Soil fertility is decreased through the destruction of the humus, and erosion is frequently so extensive that the bare rock is exposed. Such areas become deserts, for all practical purposes, instead of constituting, as they might and should, permanent sources of raw material for industry and of revenue for the provinces.—C. L.

## Electric Power On the Farm

Its More General Use Must be  
Promoted by Power  
Distributors

Electricity as a farm power is rather an experiment as yet. The Hydro-Electric Power Commission of Ontario has done much pioneer work and has indicated the possibilities of electricity on the farm at important experimental and demonstration work. At the present time, the Commission is doing its utmost to teach farmers the importance and value of efficient electric power applied to labour-saving devices. The actual use of power on the farms of Ontario is restricted, however, to twelve townships in the southwestern portion of the province.

The Electric Power Company is operating in the Trent valley and along lake Ontario, a country well adapted for rural work. This company, which first engaged in the enterprise about four years ago, has succeeded in building up a load showing good returns.

In Wisconsin, the St. Paul Southern Electric Railway Company is planning to dispose of some of its surplus power to farmers located along its lines.

As a rule, however, this form of power is not easily available for farmers. Owners of central generating stations have heretofore been somewhat averse to engaging in the business, owing to the initial cost of constructing lines through the country districts. Fortunately, this aversion is steadily disappearing, and power owners are coming to realize more and more that rural business pays. The amount of business can be increased by encouraging the farmers to utilize electricity for work which has hitherto been done by more primitive forms of power or by hand. In this way, a summer daylight load should be built up readily.

However, the only way for power owners to satisfy themselves as to what can be done in the way of disposing of power on farms at a profit, is to dispose of it on a demonstration basis at first.—L. G. D.

## Our Annual Fire Loss

Each Year Shows a Large Increase—  
Responsibility must be Placed  
and Punishment Provided  
to Curtail Number

Canada as a young nation has many things to be proud of, many things to regret, and some things which should be a disgrace to any country. One of the latter consists of our enormous fire waste. In the year 1913, Canada suffered a financial loss of approximately twenty-six million dollars by fire, and this amount represents only the loss by the destruction of buildings. To this should be added the actual money loss caused by interference with the continuity of business, the losses to public utility companies, in wires, meters, telephones, etc., and also that of the municipal corporation in requiring the use of expensive fire fighting equipment.

How long shall we allow this disgrace to continue? When a forest fire consumes a large tract of our best merchantable timber, we sit back and expect nature to replace the loss. When we go through utter carelessness, burn up that which the energy of man has produced, we simply ask the question: "Was it insured?" We forget that we are, indirectly, paying the insurance. The company which has carried the policy occupies the position of the middleman, collects the premiums and pays the losses, collecting in addition whatever amount is required to cover the expenses of conducting the business and paying dividends.

The man who through carelessness takes the life of another is guilty of manslaughter. The man who through carelessness destroys by fire either his own property or that of another is equally guilty of incendiarism, if not in the eyes of the law as at present construed, at least in the opinion of his fellow men.

When governments can be induced to appoint fire marshals, with power, after investigation, to place the responsibility where it properly belongs, and when punishment is meted out accordingly, then may we look for an improvement in our conditions. Our fire losses for the past three years have been as follows:

	Fire Losses	Deaths due to fires
1911.....	\$21,459,375	310
1912.....	22,900,712	257
1913.....	26,346,618	238

With an increase of approximately three and a half million dollars in fire losses in 1913 over 1912, what may we expect in the year 1914? Will it be a still further increase, or will Canadians by the exercise of individual care show an appreciable reduction in this heavy drain upon their resources?

## Commission of Conservation

CANADA

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Head

CONSERVATION is published about 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 same, together with timely articles covering town-planning and public health.

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CONSERVATION is mailed free to those interested in the subjects covered by the work of the Commission.

OTTAWA, AUGUST, 1914

The future well-being of Canada depends on the loyal acceptance by the people of the principles which aim at the profitable and scientific development and conservation of her natural resources.—*Earl Grey.*

Safety on the farm is as important as anywhere else. Many accidents are caused by the careless handling of machinery or by lack of proper inspection before machines are put into commission.

If an employer shows his interest in the supplying of safety appliances and in the education of his employees in the taking of precautions to prevent accidents, it will not be long before definite results will be apparent all along the line of help from superintendent to apprentice.

To be consistent, the man who sits back and expects that nature will replace the burned forest might also expect the supply men and the mechanics to replace, free of cost, that which they had supplied or produced and which, through carelessness, had been destroyed by fire.

Midsummer represents, to most lines of industry, the period of quiet times. Good use may be made of this season in the thorough clean up of the premises, the installing of safety appliances and the education of the staff in their use. Surprising results will thus be attained in the way of fire and accident prevention during the busy season following.

Let us remember that the conservation of our natural resources, though the greatest problem of today, is yet but part of another and greater problem—the problem of national efficiency.—*Ex. President Roosevelt.*

## Conservation and Rural Depopulation

Disregard of the Principles of the Farmer produces the Latter Result;

The exodus of population from our agriculture's communities constitutes one of the most important phases of that composite subject so frequently referred to under the vague but convenient term, "the rural problem." The admirable analysis of this question of rural depopulation, given by Rev. John MacDougall in his book entitled, "Rural Life in Canada," is of particular interest to the advocate of conservation, in that it emphasizes the close connection between the proper use of national resources and the maintenance of a large and prosperous rural population. Nations have, hitherto, failed to realize the full importance of this relation and their failure to do so has been a costly and irreparable error.

"Conservation," referring to the wise use of a country's natural resources, is a word of no narrow meaning. It stands, first and foremost, for the elimination of waste and extravagance in respect to those resources which are limited in supply, and for the propagation of those which, although limited, are reproducible. But it means more than that. It stands for economy in the entire field of production, as well as in consumption, for the utilization of all portions of the national domain in such a manner as to secure the maximum return therefrom. These are the cardinal principles which former generations disregarded and which the present has not yet learnt to appreciate thoroughly. They become fully realized only when the results of disregard are manifested in such tangible forms as the present wholesale abandonment of once-thriving agricultural communities. For this movement of population, the failure to observe the principles of conservation has not been wholly responsible, but it has contributed in two ways.

Primarily, there has been the reckless exploitation of wooded areas which were never of a nature to justify agricultural settlement. Lands, with soil adapted only for forestry purposes, have been stripped of timber, exhausted by a few crops and abandoned in such condition as to be almost useless even for reforestation. From start to finish the policy pursued has been ruinous to national welfare.

Secondly—lands which were originally of real agricultural value have been farmed with utter disregard of the possibility of the exhaustion of soil fertility. Under scientific methods of cultivation, they would have been permanently available for profitable agri-

culture, but when literally "mined" of their fertility, have been deserted for newer and more fertile areas. Such methods may enrich the individual, but never the nation.

Failure to practice conservation methods in by-gone years is not the sole cause of rural depopulation to-day, but it is, probably, the only one of the several causes, to which that movement is due, which need occasion regret to the present generation and reproach to our ancestors. Most of the other economic causes have increased the productive efficiency of the nation, this has immeasurably lowered it.—*O. M.*

## Hill Selecting of Potatoes For Seed

Hills showing vigorous growth should be marked—Seed of Strong Vitality thus secured

Good seed is worth all of its cost of production; poor, weak seed is dear at any price. Seed of great vitality is of the utmost importance to the grower, and the losses due to poor seed would be staggering if fully realized. There is a widespread practice, among farmers, of planting several size potatoes, regardless of whether they come from vigorous hills or not. This is a serious mistake which can have only one result, i.e., the early running out of the variety. The practice of hill selection should be carried out, for, although it involves some extra labour, it is worth many times its cost.

If the seed has been planted one seed piece in a place, uniformity of selection can be secured by confining the choice to the one-stalk hills in the field. This method can be varied, however, by setting a standard in the ratio of not less than four good, marketable potatoes to a one-stalk hill, seven to a two-stalk hill, and ten to a three-stalk hill. When the crop is half or two-thirds ripened, the grower, with a bundle of twigs or sticks, goes over the field and marks a number of the hills showing exceptional vigour, for next year's seed. When the crop is ready for digging, these marked hills can be dug by hand. All of the marked plants have shown vigour but all may not produce desirable tubers. Any marked hill which produces fewer tubers than we have set for the standard, or is undesirable in other respects, should be discarded. Selection in this manner secures vigour, which is of prime importance in enabling the crop to withstand insects and diseases. Moreover, the grower is obtaining all of his seed stock from hills that have produced a fair number of marketable tubers, thus insuring an increased yield.—*F. C. N.*

## Safety First on the Farm

At this Season Special Precautions should be taken to Avoid Accidents

In the Province of Ontario, during the year 1912, there were 1,831 deaths due to external violence. Many of these occurred on the farms. No less than 25 were caused by injuries received from animals. Many others were due to carelessness around farm machinery, unsafe harness causing horses to run away, falling through open trap-doors or down feed chutes, ladders breaking, etc. In some cities, and over some railway lines, a "safety first" campaign is under way. "Stop, look, listen," is a splendid warning sign for a railway crossing, but its equivalent should be sounded in many other places. The risks to life and limb on the farm are so numerous and so plain that one would expect to see them largely removed, but they are not. Children on the farm should be taught the dangers inseparable from association with live stock, and to be careful *always*.

The bull may be thought to be safe and gentle, but he can never be trusted. Three deaths, in one week, by goring are among the casualties in the press reports during June, 1914. Farmers are repeatedly taking chances by getting in front of the knife of the mower or binder, to make some adjustment or repairs, while the horses are hitched and liable to start, and thereby cause a serious accident. When threshing and silo-filling time comes, every precaution should be taken to guard against accidents. Prevention is a thousand times better than neglect and carelessness, which latter often lead to accidents and loss of life. Human life is held far too cheaply and if the parents fail to teach the children to be careful, and to avoid unnecessary risk and danger, they can scarcely escape responsibility when preventable accidents, causing disfigurement or loss of life, occur.—*F. C. N.*

## Carelessness Causes Forest Fires

A Large Percentage of Forest Destruction Caused by Campers and Sportsmen

An investigation by the New York Conservation Commission as to the origin of forest fires in the Adirondacks shows that fully 85 per cent of the fires which occurred during 1913 were preventable. If smokers had not carelessly thrown burning cigars or tobacco upon the dry vegetation, one-third of these fires would not have occurred. If fishermen had been more careful with their fires and tobacco, nearly one-fifth of these fires would not have occurred. Of the 688 fires reported, only 78, or 11.3 per cent, were caused by locomotives, while nearly 10 per cent were reported as being due to the carelessness of campers.—*C. L.*

## Home-Grown Clover Seed

With Care Excellent Results may  
be Obtained—Methods of  
Cutting Explained

Under normal conditions the second crop of clover should be cut for seed when the heads have turned dark brown and when most of the seeds are in the stiff dough stage. It is not advisable to cut the clover when the seeds are soft, expecting them to ripen after the cutting, as light, shrivelled seed is likely to result. Give the seed a chance to fill properly, even if a few ripe heads are lost. This loss may be materially reduced by cutting either early in the morning or late in the evening; there will be little shattering when by reason of the dew, the straw is less brittle. If the clover is tall enough it can be cut very conveniently with the binder. The cord should be removed, and the trip and the boards, that hold back the sheaf, should be slackened or removed to allow the clover a free course to the ground. In this way, the clover will be laid in a light windrow out of the road of the horses on the next round, and in good shape for drying. When ready, it can be gathered easily with the barley fork. The old-fashioned reaper is sometimes used, or, if the crop is short, the mower will be suitable. A flat, board table may be attached to the back of the cutter bar, after having a couple of holes drilled in it. The clover is kept back from the bar and raked off into windrows by the man following the machine.

The clover must be thoroughly dry before threshing. If threshed in the field, it should be left until the dew is gone; the same course should be followed if it is to be hauled into the barn to be threshed later on. If a clover huller is available, the threshing is a simple matter. If, however, there is no huller in the neighbourhood, grain threshers may be used, some of which have a clover attachment. If necessary, the ordinary machine can be adjusted to do fairly clean work. First, the clover should be run through, as in grain threshing, to separate the heads from the stalks and hull part of the seed. Next, fasten a piece of sheet iron in firmly, directly behind the cylinder, to close up all of the back except eight or nine inches at the left end, and close the front, except a foot at the right end. Close, also, any openings in the concaves. The object is to make the short material pass from one end of the cylinder to the other in order to remove the seed. The chaff can be put through again, if necessary.  
—F. C. N.

Human life, and its preservation from disease, impairment of usefulness and its loss of producing power, is the most fundamental of all subjects of Conservation.—*Col. Harvey, Pennsylvania.*

## Sanitary Conditions Essential to Healthy Homes

The art of laying-out, either the nucleus of a new city or the extension of an existing one, to the best advantage of its population, as regards economy, beauty and health, both now, and in time to come, is called "town-planning."

If the twentieth century is to be marked by Canada's expansion, and no one doubts the statement, it is in the highest degree essential that we should be wise and see to it that none of the evils incident to the development of the great industrial centres of other countries, particularly in the way of insufficient, inadequate and improper housing accommodation, scar the fair name of Canada.

Let it be said of Canadians that we have been wise, and, by the early adoption of preventive measures, have endeavoured to obviate errors in town-planning and housing. These will no longer be possible if adequate powers be given to health authorities to condemn, and, if need be, destroy the house which is not a home. Along these lines the Commission of Conservation is working, in the hope that our provincial governments will, at an early date, adopt the necessary legislation, and, what is more essential to the successful carrying on of the work, will establish provincial boards or commissions to direct and supervise the work, which is of a peculiarly technical character. To attain this end, the assistance of the public is necessary, for it cannot be too clearly understood that sanitary reform in this direction waits on public opinion. Without this impulse from the people, no substantial housing reform is possible. This was the opinion of the Royal Commission of Great Britain on Overcrowding, in 1884, and the words are worth repeating here: "What, at the present time, is specially required is some motive power, and probably there can be no stronger motive power than public opinion. We require an awakening of civic conscience and a well-informed and active public opinion."

Perhaps to secure this public opinion the moral effects of sanitary reform may be indicated in the words of two well-known English reformers, one a philanthropist, and the other a sanitarian, Lord Shaftesbury and Sir J. Simon. The former said: "Ninety-ninths of our poverty, misery and crime are produced by habits of intoxication, and I trace these to the demoralizing conditions of the great mass of the population of this metropolis and of the large towns of the country." While the father of sanitary science in England wrote most tersely—"Where overcrowding exists, in a sanitary sense, almost always it exists even more perniciously in certain moral senses." To children who are born under its curse, it must often be a very baptism of infamy."

If, therefore, we cannot favour this sanitary problem for sanitary reasons, surely the appeal for support to the effort now being made to secure improved and healthier homes, must strike a sympathetic cord in the hearts of mothers and fathers—for, to sum up the opinion of these two philanthropists, overcrowding is damnation of both body and soul.

We require in Canada that the health and vigour of our race should be maintained at the highest attainable standard, so that each and all can fulfil the duties of life and leave the world better from our having lived here. These desirable objects can only be attained by individual effort on the part of each one of us to do his or her utmost to preserve the lives of those entrusted to our care and thus conserve the health of the community in which we live and the nation of which we form a part.



Cut No. 71

Cutting Red Clover For Seed

Two holes may be drilled in the cutter bar of the mower and a flat, board table attached, upon which the clover is raked back and <sup>off</sup> into windrows, as shown in illustration.

## Disaster at Hillcrest

Should the Government Educate  
Miners along line of their  
Hazardous Occupation?

One of the worst accidents in the history of mining in Canada occurred at the Hillcrest colliery, in the Crownsnest district, on June 19. Two hundred and thirty-seven men went down to work in the mine and only forty-eight returned alive.

The great elements of danger in coal-mining are gas and coal dust. Every precaution is taken to prevent the ignition of these by the use of approved safety lamps and permitted explosives. Shooting is not allowed where gas has been found and all shots are fired by shotlighters. Despite these precautions, explosions occur, and, in the case of coal-mining in the Crownsnest district, where the coal rolls down chutes to the level below, there is necessarily considerable dust. When one considers that experiment has proven that an explosion was obtained when coal dust is present only to the extent of about one-fifth of an ounce per square foot, this is much less than the dust present in the roadways of many mines, the importance of the dust problem becomes apparent.

Many remedies have been proposed to render the galleries of a coal-mine safe from coal-dust explosions, the chief of which are—

- (1) Removal of the dust by shovelling.
- (2) Watering by sprays, etc.
- (3) The provision of "stone dust" or of "wet" zones on the main roads of the mine.
- (4) Use of salt, calcium-chloride, or other inexpensive, deliquescent compounds.
- (5) Intermixture of stone or shale dust by sprinkling the roads with the same.
- (6) Prohibition of dry tamping in shot firing.
- (7) Prohibition of coal-dust tamping in any form.

It is hoped that the investigation will not be confined to the cause of the disaster at Hillcrest, but that it may be extended to cover all coal mining operations in the Crownsnest district.

Another proper governmental function would consist in some action towards educating the miners with regard to the nature and hazard of the work. This important matter should not be neglected, because, on account of the scarcity of miners in the West, the operators have to employ men with little or no coal-mining experience and safety depends, to a certain extent, on the intelligence of the least intelligent man employed; his carelessness or ignorance may wreck the whole mine.—*W. J. D.*