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Conservation

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NO. 1

"Made in Canada" Means the Employment of Canadians

Harvesting the Ice Crop

Co-operation Among Farmers an
Economic Advantage in
this Work.

There are few localities in Canada that have not available a river or smaller stream from which a supply of ice may be obtained for use during the summer months. The ease with which the ice crop may be secured is probably the reason why it is not taken advantage of to a greater extent than at present. For economical harvesting operations it is advisable that a number of the farmers of a community co-operate, sharing the expense, and making the labour proportionately lighter.

A few tools are necessary to harvest the ice supply efficiently. A steel scraper to remove the snow covering is desirable; some styles of road scrapers may be used, or a very good homemade scraper may be made of wood and laced with a strip of steel. An ice plough facilitates the work of scoring into blocks for breaking off. A slice bar for breaking off the blocks can be made similar to a rowbar, with a sharp blade from six to eight inches wide. An ice saw may be improvised by removing one handle of a cross-cut saw. A number of pike poles, ice awls and a chain, with heavy pair of ice tongs attached, complete the tools required. A platform, one end of which may be let down to the level of the water, and the other end raised to the level of the floor of the ice house, permits the use of a horse taking the ice out of the water and loading on the sleigh.

The ice should be packed as tightly as possible in the ice house and care taken to have sufficient insulating material around the inside and on top. If more ice is required than can be accommodated in the ice house, it may be led outside, first laying boards on the ground, and covering them with a layer of sawdust or straw. The sides and top should also be well covered and protected with boards to prevent the wind carrying away the insulating material. In this way the ice will keep well into the summer.—D.

Home Use of Pulp Wood

Increase in the Manufacture of Pulp in
Canadian Mills

Sixty-four pulp mills in Canada report a total consumption, in 1913, of 1,109,034 cords of pulpwood. Nearly an equal amount was exported to the United States in an unmanufactured condition. Thus, for the first time in the his-

Conservation of Mineral Resources

President Wilson Writes to the Mining
Congress

President Wilson, in a letter addressed to the American Mining Congress, has this to say of conservation of mineral resources: "There is one problem connected with the mining industry in which the federal government is vitally

Forest Reserve is Necessary

Conservation of Watershed of
Lake of the Woods Required
to Maintain Supply

Lying near the western boundary of the province of Ontario, and extending into the province of Manitoba and the state of Minnesota, the Lake of the Woods system plays an important part in the water supply of that region. When surrounded by a timbered area, the watershed is amply protected. With the increase of population, however, the timber has become a prey to fire and to the unscientific forester, and, under present conditions, it is only a question of time when all timber of any value will be removed.

The Lake of the Woods watershed is the great reservoir of the Winnipeg river and the water-powers of the latter supply the city of Winnipeg and town of Kenora with light and power. At an early date, Shoal lake, a tributary to the lake of the Woods, will furnish the water supply for the city of Winnipeg; construction work on the pipe line is at present under way. At the meeting of the Commission of Conservation in January last, Mr. J. B. Chaffies, Superintendent of the Water Power Branch of the Dept. of the Interior, proposed that this district be set aside as a forest reserve.

The area is one in which, owing to the nature of the underlying rock, the flood run-off of the rivers is excessive. The fact that the southwestern portion of the lake is in the United States renders the situation more difficult, in that it is not possible to materially raise the level of the water by conservation dams.

For the perpetual benefit of the surrounding territory, it is of the utmost importance that the Lake of the Woods district be set aside as a forest reserve. This would provide for the protection and renewal of the timber, and for the maintenance of the forest cover of the watershed. In this way the waters of the lakes, on which so many depend for the supply of water, light and power, would be conserved.—D.

CANADA'S DUTY—1915

Conservation and development of her

Water-powers

Minerals

Forests and

Fisheries

Large increase in farm production

Increase in live stock production

The cultivation of the garden plot

The purchase and use of goods "Made in Canada"

Provision for technical training of her sons and daughters

Further advances in providing sanitary homes and clean cities for her people

Extension of the "Safety First" movement

Further reduction in fire losses

Business as usual

tory of the industry, more than half of the pulpwood produced in Canada was manufactured into pulp in Canadian pulp-mills.

Quebec leads in the consumption of pulpwood, followed, in the order named, by Ontario, British Columbia, New Brunswick and Nova Scotia. As the pulp industry on the Pacific coast is still in its infancy, steady increase in British Columbia may be expected. Over two-thirds of the wood used for pulp was spruce, and one-fourth balsam fir. The percentage of fir used has increased steadily, as the prejudice against this wood has been overcome. Jack-pine is also beginning to be a factor, though still a small one, less than 20,000 cords being reported as manufactured in 1913.

interested, and that is, proper conservation and proper use of the mineral resources of the nation. I realize that you, too, are interested in this problem, and I wish merely to call it to your attention because of its fundamental importance to the present and future prosperity of the nation. I am happy to say that the profrugality of the past in the use of these resources is not being continued on so large a scale. There is, however, great opportunity for further reform along these lines."

During the coming year, Canada, as the "granary of the empire," should make such large increases in production as to fulfill her duty and deserve the appellation.

Results of Forest Fires

Destruction of Forest Cover the Cause of Large Decrease in Water Supply

Residents of Wallace, Idaho, now claim that results of the disastrous forest fires in northern Idaho in 1910 are being made evident in the changed flow from a watershed then burned over, which furnishes the water supply of the town. This basin included an area of approximately two thousand acres and was formerly well timbered with trees from 50 to 200 years old. These were almost wholly destroyed by the fires of 1910. From this watershed the town gets its supply not only for domestic purposes, but also for the development of electricity for power and light, so that the maintenance of a considerable flow is essential to the city.

It is stated that before the fires the flow of the stream at its lowest stages was never below one thousand miners' inches, the unit of measurement which has been used. But since the fire, the records show that the minimum flow has fallen to about 250 miners' inches and it is now necessary for the company which furnishes water, light and power to expend a considerable amount of money each year in developing power from steam and to use a considerable part of this power in pumping water. Records of the weather bureau at Wallace show that the precipitation for the years since the fire has been about normal for the region. This seems to show that the variation in the flow must be due to the destruction of the forest cover of the watershed and not to any change in climate or precipitation.

In view of the situation, the forest service has undertaken to reforest the denuded watershed. Some planting has already been done and eventually all of the watershed which is included within national forest boundaries is to be reforested. The people of Wallace are taking considerable interest in the work and express themselves as thoroughly in sympathy with the effort that the service is making. The experts of the department, however, point out that while the planting will probably have no immediate effect, yet it should in conditions are restored, and so establish eventually a more stable stream-flow. In the mean time the forest officers are taking measurements of the stream in connection with the records of precipitation, to determine just what relation exists, and what results will follow reforestation.

"Made-in-Canada" means development of Canada's natural resources and employment of Canada's workmen.

Charcoal Burning

Wood Now Destroyed Might be Profitably Converted into Charcoal

In land clearing work, use may be made of the wood taken there for the production of charcoal. Canada has a constantly growing market for charcoal, and with good prices for the supply, it is advisable to increase the production. While the retort is, undoubtedly, the more economical means of producing charcoal, the advantage is offset by the fact that the wood which would be utilized in the production by pit burning would otherwise be waste material, and, consequently, the return from its use would offset the

side inwards, commencing at the base and working upwards, the sod overlapping a few inches, and the chimney being left open. Before covering the top part of the pit, all crevices between the wood should be packed with sod or sawdust to exclude the air. The pit is fired by dropping hot coals and small pieces of dry wood into the opening at the top; the opening is then covered with sod, which effectually closes in the pit, and the charring commences.

Constant attention is required day and night during the burning, especially during stormy weather, as the wind, by striking a particular part of the pit, causes that part of the pit to burn more rapidly and possibly fall in. Should this occur, the space should be at once filled in with rough logs and again covered with sod.

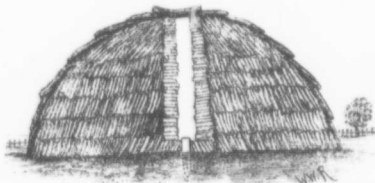


FIG. 82 Section through a Charcoal Pit, showing method of building and covering.

additional cost of production by the latter method.

For charcoal burning, it is essential to have a piece of land sheltered as much as possible from the wind. All kinds of hardwood not under two inches in diameter may be used. The wood should be sawn into two-foot lengths, and split, if required, into pieces not over four inches square. Sufficient wood should be provided for two pits; it is advisable to burn two pits at once, as during the charring process two pits can be attended to as readily as one, night and day attention being required.

Charcoal "pits"—an illustration of which is shown herewith—are usually built about twenty-one feet in diameter and about nine feet high. To commence the pile, a strong stake is driven into the ground, having about one foot exposed. Around this stake are placed upright small pieces of dry wood of equal length, and this is continued until a layer of wood is formed the size of the pit. A circle about one foot in diameter is built around the stake driven into the ground by placing the pieces of wood horizontally on the upright pieces, the end coming to the centre circle. This circle is thus built up to the required height, forming a chimney for the pit, by which it is fired. Outside this circular core the wood is piled on end and reclining inwards, layer upon layer, until the pit is of the size required. When the building is completed it is covered with newly-cut sod, the grassy

time required for burning varies from seven to nine days, according to weather conditions, dry and mild weather requiring the longer period.

As the charring proceeds, the sod covering gradually disappears until only a slight covering of burnt earth remains. When the pits have burned out and become cool their size will be reduced to somewhat less than half of the original. The charcoal may be extracted by means of a fine-toothed rake, after which it should be stored in a dry place, care being taken to see that no live embers are left.

There are a great many uses for charcoal, among them being that of an insulating medium in cold storage plants and as a disinfectant, charcoal having the property of absorbing gases, as well as being a preservative of food and animal substances.—D.

Implements and Their Care

Winter is for most farmers a season in which there is comparatively little outdoor work. There is, however, always work of some kind for the energetic man on the farm. The care and protection of his investment in implements should be one of his important duties. By this care, not only can he prolong their usefulness, but he can save considerable time.

It is of paramount importance that implements and tools, when

required for use, be in condition for satisfactory service. Especially at harvest time, it may be a matter of hours to get the crop secured, and it is then that the results of care and inspection are apparent.

Machinery consists of fixed and moving parts, and it is necessary for their successful operation that they remain in this condition. Use, however, causes vibration, which tends to loosen and wear bolts and other parts of machines. An inspection will discover where these are and nuts may be tightened and worn parts renewed; these, if neglected till the machines are required, may cause the loss of valuable days through the loss of bolts or nuts, or while new parts are secured. All moving metal parts should be covered with vaseline or other grease to protect from rust and consequent increased friction in operation.

It is a good plan to have on hand an assortment of bolts, nuts, screws and cotter-pins, as well as wrenches, especially socket wrenches and extensions. A surprising number of bolts and nuts are put in the most difficult place to get at, and, if proper wrenches are not available, many delays result.—D.

Forestry on a Business Basis

Actual Results Obtained from Scientific Operation

The best example of a municipal forest developed specially along commercial lines is the Sihlwald, the city forest of Zurich, Switzerland. This is an extensive tract of 2,560 acres on the high mountain near the city. It has been under some form of systematic forest management since 1250, over 600 years ago.

Thinnings are made when the trees are only 15 years old and repeated at intervals of from 5 to 10 years. The products of the thinnings, even down to the smallest twigs, are marketed at a profit. The total yield from thinning alone is about 10 cubic feet per acre per annum, which is a splendid showing of the results of practical forestry. The annual growth on the whole forest is about 2 board feet per acre annual. Under natural conditions, it would not be over 100 board feet.

The utilization of the products of the Sihlwald is especially interesting. Instead of selling the timber as it stands, as is the common practice in this country, the city does all the work itself, giving year-round employment to about 110 men. The trees cut from the forest are not only worked up in the form of lumber and fuel, but the city actually makes small articles as tool handles, wood turnery, excelsior, wood implements, etc. The tops are bound up for faggots, and everything, even the stumps, and even the very leaves on the ground are used.

Commission of Conservation

CANADA

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Assistant to Chairman and Deputy 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 the 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, JANUARY, 1915

The training of children in fire prevention and safety precautions is one of the first duties both of the parent and teacher.

The increase in consumption of "Made-in-Canada" goods will mean decrease in cost of production. This decrease will enable Canadian manufacturers the better to meet competition in foreign markets.

The housing problem is business. City planning is business. Sanitary science and public health are business. These are questions for every employer and employee to consider, for only under favourable living conditions can the human unit reach the maximum of efficiency.

Canada is a large importer and borrower. In order that she may continue to buy abroad what she requires, and pay interest on her borrowings, she must sell. European countries will require all Canada can produce, and to take advantage of this opportunity, Canada should greatly increase her production, especially of live stock and farm produce.

Discussing from an American standpoint the situation created by the European war, Mr. George Otis Smith, Director of the United States Geological Survey, emphasized the essential requirements of American industry. As his remarks are also applicable to Canada, they are quoted herewith: "Coming down to bottom facts, the United States will profit by the European war only as the nation makes larger and wiser use of its mineral resources. Foreign markets in the main can be won and held only as the quantity or quality of the 'Made-in-America' product rivals that of the goods offered by the other producing

nations. The buyer, whether he be in the Far East or in South America, wants the most and the best for his money. Yet it would seem a safe rule of national conduct that industry should begin at home, and therefore every industrial opportunity in America should be improved. If these opportunities are recognized and grasped every one of us can indulge in optimism."

ACCIDENT PREVENTION

That accident prevention is largely a matter of education has been clearly demonstrated by carefully compiled statistics of some United States railways, recently published. On one railway, during a period of fifty-three months of operation since the formation of safety committees among the employees, a reduction of 371 is shown in the number of persons killed and of 11,258 in the number injured.

At the same time, despite this favourable showing, in three years there were registered 17,781 accidents, of which 99 out of every 100 could have been prevented.

While no statistics of the accidents occurring throughout Canada, are available, it requires only a casual glance at the newspapers to show that the number is large. In view of this fact, it is very evident that there is great need of an extension of the "safety first" educational movement in Canada. The subject is one which should not be left entirely to private interests to develop; it is in the general interest of Canada at large that the number of her disabled and injured citizens should be greatly reduced.

A fertile field for the propagation of the "safety first," or accident prevention, movement is the public school. The need of care should be taught the child, as lasting impressions can be made upon the young mind. The pulpit also has an influence which should be directed towards education along accident prevention lines. This work may rightly come under the head of social service, in which some churches are taking an active interest.

Canada owes it to her people, municipalities owe it to their citizens, schools and other organizations owe it to their scholars and members that attention be faithfully directed to the matter of safety and accident prevention, both public and personal, and that they be made to realize that it is better to be careful than to be a cripple.—D.

NATIONAL CONTROL OF NATIONAL RESOURCES

Few nations have set out on their courses with such a magnificent national domain as that which was placed in possession of the United States.

The experience gained by the republic and the policy followed

in the administration of her wonderful resources have been noteworthy, while the result is one of deep interest. To the average American citizen the policy has been costly, to the foreigner, instructive. The final outcome has been that, in a land originally permeated by the gospel of state rights, there has now grown up a vast and potent public opinion favouring national control of national assets. State administration has, in actual practice, resulted in lack of uniformity in legislation, in interstate competition and in the vesting in the few of the property rights of the many. The ever increasing sentiment advocating central control of natural resources has had its practical manifestations in the national conservation movement inaugurated under Mr. Roosevelt, and in federal legislation respecting forests, coal deposits, water-powers, and migratory birds.

At the present time, a further measure of this nature is awaiting the attention of Congress—a measure which aims to place migratory fish under the protection of the Washington government.

PLOUGHING MATCHES

There was a time in Ontario and Quebec when the ploughing match was an event of importance in many localities. Later, interest in the matches decreased greatly, especially among the younger men. As a result, good ploughing and good soil cultivation have fallen back some points since the old days, except in the few districts where the matches have been continued. As the first-class ploughman is likely to be a good cultivator of the soil, agriculture, in general, has suffered. On the other hand, the farmer who regards ploughing merely as a process of turning over land, the sooner done the better, will not, and can not, be a good cultivator of the soil. Unless the soil is well ploughed, it is impossible to give the land the best of preparation for the seed.

It is encouraging to note, however, that the ploughing match is being revived, and that the Prairie Provinces also are taking a keen interest in competitions of this kind. If they are beneficial as an aid to better farming on the virgin prairie they are of even greater value in the older parts of the country, where the land needs more careful working to maintain soil fertility and increase crop production. Good ploughing is a matter of good ploughmen as well as of good ploughs and, as these matches encourage good workmanship, they are worthy of support by all interested in better farming. As they have an educational value and often give the boys the needed encouragement to remain on the farm, ploughing matches might well form one feature of the work of the Farmers' Club, Farmers' Institute, or Agricultural Society.—F. C. N.

VALUE OF SCIENTIFIC FORESTRY

The aim of forestry is to bring the forest up to its highest state of productiveness and keep it there. In the United States, where forestry is not practiced except on Government and State lands, the estimated annual production is 12 cubic feet per acre.

In Canada, the average rate of growth is undoubtedly materially less than this, the climatic conditions being, on the whole, less favourable.

In Saxony, where forestry has been practiced for many years, the annual production is 93 cubic feet. According to experts, the rate of growth in Canada, as well as the United States, could undoubtedly be multiplied several times over by the adoption of proper scientific methods, of which the most essential at the present time is efficient fire protection.

Fireproofing Shingles

The Use of Paint Greatly Reduces Their Danger

Building conditions in Canada are such as to make the use of shingles for roofing houses, stables, etc., almost universal. Their general use, in an unprotected condition, adds considerably to the ordinary fire risk, as well as to the conflagration hazard, and, consequently, increases the insurance rate on the buildings concerned. To overcome this disadvantage, numerous investigations and experiments have been and are still being made with the object of discovering a material the application of which will render the shingle roof fireproof, or, failing this, to secure a process of treatment of shingles whereby they may be included in the category of slow-burning structural material. Thus, it has been demonstrated that the use of a good quality of linseed oil carrying a suitable pigment will materially reduce the hazard. By the application of paint, the shingles are protected from the weather, thus preventing warping and the formation of pockets in which hot cinders may lodge; irregularities in the surface are also filled up by the paint.

Experiments have demonstrated that, under a one-minute exposure to flame, painted shingles are barely affected while unpainted shingles are badly attacked. Under a three-minute test, the unpainted shingles were severely burned while the effect upon the painted ones was such that the actual burning was limited to the portion directly exposed to the flame, the paint retarding the spread of the fire and the charring of the wood. In the absence of any positive fireproofing material, the results obtained from the use of paint upon exposed shingles may be considered one of the best means of reducing the fire risk on shingle-roofed buildings.—D.

Potash and Wood Ashes

Some Valuable Products for Land Improvement Available from this Source

With the supply of potash from the German mines shut off by war conditions, Canada should now give attention to the large quantity of this fertilizing agent which is allowed to go to waste through want of care and conservation of the annual production of wood ashes.

Throughout a large part of Canada the chief fuel at all seasons, but more especially in winter, is wood. In the eastern provinces, hardwoods are chiefly used. These woods, especially beech and maple, are rich in potash, varying from 5 to 13 per cent, according to conditions of dryness of the wood and care of the ashes. Other valuable ingredients of wood ashes are a small proportion of phosphoric acid and about fifty per cent of carbonate of lime.

In the clearing of wood lots and in the burning of debris after taking out the fuel supply, large amounts of ashes are produced. These as a rule are left where the burning is done, and are consequently wasted.

Wood ashes should be carefully stored, in fire proof receptacles if possible; in any event away from any danger of fire, and should be kept dry to avoid leaching. In the spring they should be spread upon the land. They are especially valuable as a fertilizer and to encourage the growth of clover and the better grasses.

Wood ashes, by hastening the decay of organic matter in soils, render more readily available the nitrogen contained therein. In sandy soil, wood ashes supply the phosphoric acid and lime in which these soils are deficient, while, on clay lands, the lime content of the ashes tends to render available the potash salts already present in abundance. Potash as supplied to the land through the medium of wood ashes has a distinct advantage over the potash salts as imported from Germany, in that it is in a very soluble form, and hence is at once available for plant food.

The importance of wood ashes, as shown above, as a fertilizer can hardly be over-estimated. It is consequently of first interest to the agriculturists and lumber interests of Canada to conserve the supply wherever and by what process produced.

During the present winter large undertakings in land clearing and right-of-way clearing of railway lines will be in progress from the burning of the debris of which large amounts of ashes will accumulate. Some steps should be taken to provide that these ashes are not wasted, as apart from the difficulty of securing potash supplies, the market value of ashes at present is from \$8.00 to \$12.00 per ton, depending upon quality.—D.

The Annual Meeting of the Commission of Conservation will be held in Ottawa on the mornings and afternoons of January 19 and 20.

The Annual Meeting of the Canadian Forestry Association will be held in Ottawa on Tuesday evening, January 19.

The Annual Meeting of the Canadian Society of Forestry Engineers will be held in Ottawa, at 5 o'clock on Wednesday, January 20.

Farm Losses

POOR SEED

Only nineteen out of one thousand Canadian farmers visited last year by the representatives of the Commission of Conservation were found to be following a systematic selection of seed grain.

An alarming state of affairs is disclosed, when investigation demonstrates that less than two per cent of the farmers visited follow a systematic selection of seed similar to that followed by members of the Canadian Seed Growers' Association. It is true that quite a number keep the best part or parts of their fields for

Brunswick, seventeen varieties were found on forty farms and, in one district in Ontario, there were nineteen varieties on fifty farms. The farmer will buy these new varieties without knowing their strength of straw, susceptibility to disease or general suitability to his district.

Seed selection is not costly. If the farmer will save the best portion of his crop and then thoroughly clean that portion, by running it several times through the fanning mill, he will not find it necessary to pay out money for seed no better than, and often not so good as, his own, well cleaned. In many tests on the Illustration Farms of the Commission, it has been clearly demonstrated that it pays to sow good seed. In the case of clover, the crops from home-grown seed have proved, in nearly every instance, to surpass those produced from purchased seed. In many districts where farmers think clover and grass seeds can not be grown, it has been proven that these seeds can be successfully produced. They are often found growing to perfection on roadsides and in fence corners, which goes to show that, with care, they will grow in the fields.

During the winter months is the time to prepare the seed grain for the spring sowing. Clean out all the weed seeds and poor and shrunken kernels so that the good grain will have a chance to do its best. The question of the quality of seed a farmer shall sow is largely in his own hands. It rests with him whether it shall be clean or dirty, good or poor. *Good and clean seed will pay.*—F. C. N.



FIG. 83
Corn grown from selected seed on one of the Commission's Illustration Farms.

seed only, in Prince Edward Island, less than one-third of the farms visited do even this and only fifty per cent claim to do it on the two hundred farms visited in Ontario. In Nova Scotia, forty per cent of the farmers and, in Quebec, thirty-one per cent, bought their seed grain. Too often this purchased seed is only feed grain shipped in from the west and sold as seed. Frequently it contains foul weed seeds and, when, as in Nova Scotia, only sixty-four per cent of the farmers claimed to clear their grain in any manner whatever, these weeds are introduced to the farms. The western oats are sometimes frosted, and, as the farmer does not test for germinating power, a poor and thin stand often results.

The purchasing of seed often brings in new and unsuitable varieties. In one district in New

Such an industry might well be developed in Canada. The country possesses great areas of marsh land, at present of little direct value, which might be made to produce considerable revenues. Muskrat fur is steadily growing in favour. The aggregate offering on the London market in March, 1914, exclusive of the Hudson's Bay Company's sales, was 4,646,500 skins. While this figure probably shows an accumulation from the previous year, still the price quoted for April was 50 cents a skin. The demand for muskrat meat would be confined almost solely to the Indians unless it was a flesh diet for other fur-bearers that are being farmed. Such an undertaking should prove of special value to the Indian and other trappers who carry on their work in the more remote portions of the country. At the same time, many areas of marsh land in the settled sections which now are of little or no use might easily be made to yield considerable financial returns.—A. D.

Conservation of Fish

Increase Required in the Use of Smaller and Cheaper Grades

Dealers in fish find it difficult to dispose of the inferior varieties and the smaller grades of fish that are brought in by the fishermen. Consumers forget that little fish are taken in the nets as well as large ones and that all are delivered to the merchants. It follows, therefore, that, if there is only a small demand for the less choice fish, the dealers must obtain higher prices for the better grades. This is an aspect of the high cost of living which deserves the serious consideration of the public.

Except for the slight extra labour involved in preparing small fish for the table, they are in no way inferior to the larger fish, their flavour and nutritive qualities being quite as good. Similarly, many of the so-called coarser grades of fish, when skillfully cooked, are not only very palatable, but are very nutritious.

Consequently, it will be seen that greater economy can easily be practised in the use of this very important natural resource. The fisheries of Canada are both varied and extensive and should prove to be an important factor in reducing the cost of living. What is needed is more conservation in connection with them, or in other words, more careful and intelligent use.—A. D.

In the United States the federal government, twenty of the States, and thirty timber owners' associations maintain a system of patrol and take other preventive measures on their lands during danger seasons of the year.

Muskrat Farming

A Profitable Industry on Marsh or Waste Lands

Muskrat farming has proven to be a profitable business in the United States. Large areas of marsh lands in Ohio and Maryland are made to yield good returns through the production of muskrat fur. Indeed it has been stated by competent authorities that many of these marsh lands are worth more, measured by the actual income from them, than cultivated farms of like acreage in the same vicinity. Owners of such marsh lands usually lease the trapping privilege, uniting with the trappers to prevent poaching. The returns from the sale of the muskrat fur are divided equally between the owner and the trapper, the latter securing whatever extra he can from the sale of the flesh.