Conservation

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British Scheme for Industrial Research

Advisory Council will Co-operate with Manufacturers

Great Britain is making vigorous efforts to hold her own in commerce. No stone is being left unturned to assure her a leading place in trade and industry. The British Advisory Council for Scientific and Industrial Research has established a fund of £1,000,000 to encourage industries to carry on scientific research. Naturally, "much will depend on how this money is spent". It has been recognized that the war has made it essential that assistance should be given manufacturers in this important work. The Council point out that it is desirable to "avoid chaining the manufacturer to the routine of Government administration, however efficient". After much consultation and deliberation, the Research Department has recommended that the new fund should be expended on a co-operative basis in the form of liberal contributions towards the income raised by voluntary associations of manufacturers established for the purpose of research. By this method the systematic development of research and the co-operation of science with industry will be carried out under the direct control of the industries themselves. It is hoped by this means to enable research to be carried out co-operatively which could not be attempted by individual firms. Every effort will be made to prevent duplication of effort on the part of the various associations of manufacturers.

It is intended that each firm subscribing to a research organization will have the following privileges: (1) It will have the right to put technical questions and to have them answered as fully as possible within the scope of the research organization and its allied associations. (2) It will have the right to recommend specific subjects for research, and if the Committee or Board of the research organization of that industry consider the recommendation of sufficient general interest and importance, the research will be carried out without further cost to the firm making the recommendation, and the results will be available to all the firms in the organization. (3) It will have the right to the use of any patents or secret processes resulting from all researches undertaken either without payment for licenses, or at any rate on only nominal payment as compared

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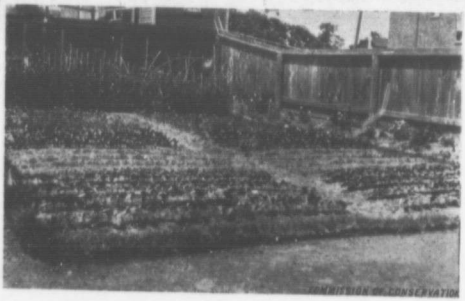

WAR GARDENS SHOULD NOT BE DEMOBILISED.

Do not demobilise your war garden. It should be put on the strength of the permanent forces of production. Gardening not only increased the food supply during the war, but it also added much to the total of human health and happiness. It is an institution that should be kept on a war footing.

Cut No. 184

Making Small Farms Pay Living Wages

What One Owner of Fifty Acres Has Succeeded in Doing

The experience of Mr. Arthur Christie of Winchester, Ontario, is a noteworthy illustration of the value of intelligent business-like methods in the handling of a small farm.

Mr. Christie writes as follows:

"When the Commission of Conservation selected our 50-acre farm for illustration work, we decided to try to ascertain whether or not it was possible to make a small farm pay the farmer a living wage. We made up our minds to follow the Commission's instructions with respect to selecting and sowing varieties of the different grains best suited to our particular locality and also to practice intensive cultivation.

"We had an ordinary herd of pure bred and high grade Ayrshire cows. We tested and weighed the milk, weeding out the unprofitable cows, until we had a fairly good herd. During the summer of 1917, we gave the land a thorough cultivation, wherever possible, and tested the different varieties of oats to find out the varieties best suited to our soil. We also seeded our fields heavily with red and alfalfa clover, in fact, we seeded all our cereal crops, whether we intended leaving them for hay or not. We hauled every bit of manure to the field daily and spread it directly on the land, and, when the spring of 1918 came around, we were ready for our trial. The season being favourable, we obtained the following results: 11½ acres of hay yielded 26 loads; 11½ acres of grain, composed of oats, wheat and barley, gave us 25 loads of sheaves, which threshed 700 bushels of grain; 6 acres of silage corn yielded 120 tons of silage and green fodder; 2 acres of

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Maintain Pulpwood Forest

The Abitibi Power & Paper Company Ltd., intends to begin a re-forestation programme this year and has asked for the co-operation of the Commission of Conservation in this work. The Commission has been co-operating with the Riordon Pulp & Paper Company and The Laurentide Company Ltd. for one and two years respectively in re-forestation work, and considerable headway has been made. The intitial studies have concerned the rate of re-forestation of cut-over pulpwood lands under natural conditions. Investigations to date point to the fact that it will take from 50 to 100 years for spruce and balsam to grow to merchantable size on these cut-over lands, whereas lumbermen have thought that reforestation would take place in about 30 years. Another disquieting feature the investigations have disclosed is the fact that where the pulpwood species are cut down, the new growth is predominately hardwood for which, as yet, there is little market. These scientific facts are of paramount importance both to the pulp and paper industry as well as to the governments concerned, which have always drawn large revenues from the forests.

Larger Loans Made For Better Houses

Government Anxious to Encourage the Use of Better Building Materials

One result of the co-operation of the Commission of Conservation with the Housing Committee is that there has been introduced into the recommendations to be made by the Federal Government something that will help to avert a certain amount of fire waste which goes on in connection with houses. The Government of Ontario limits the amount which may be spent on a house to $3,000. The result will inevitably be that cheaper material will be used, and in the Commission's recommendation to the Dominion Government it was suggested that, for a frame house with brick veneer or frame house with stucco and shingle roof, the loan be for $3,000 if the house contains four or five rooms, and for $3,500 if there be six or seven rooms; and that if the house be built of brick, stone or concrete with fireproof roofing material, the loan be $4,000 for three or four rooms, and $4,500 for six or seven rooms, the period of repayment being thirty years instead of twenty, at five per cent. The result will be that every man who wants to build a properly constructed house not only can get a larger sum, but can get it on the same monthly repayment plan as that of which the man who builds the cheaper house has the benefit. In other words, a man can get $4,000 for thirty years on the same monthly re-payment plan as the man who builds the cheaper house can get $3,000 for twenty years. Of course, the payments in the case of the larger loan extend over a longer period, but the owner has a house of more durable construction. That principle has now been adopted and will be a direct recommendation by the Dominion Government. In adopting these recommendations the government is taking a forward step in recommending the adoption of town planning principles in connection with housing schemes and in furthering these measures to secure the best methods of construction.—*T. A.*

Out of 100 average healthy men at 25 years of age, statistics prove that at 65 years, 36 will be dead, 1 will be rich, 4 wealthy, 5 still supporting themselves by work, while 54 of the 100 will be depending on friends, relatives or charity.

—*Safety Engineering.*

Coal Resources of British Columbia

Details Concerning the Several Fields in Province that are Being Worked

The Crowsnest coal-field is the most important body of coal that is being mined in British Columbia. It includes an area of 230 square miles. The coal is a high grade bituminous, occasionally running into anthracite, averaging about 64 per cent fixed carbon. Much the greater portion of the coal is converted into coke, the remainder being sold as steam coal. There are 22 workable seams, with a total thickness of 216 feet, 100 feet of which is estimated as workable.

In addition to the Crowsnest field referred to above, areas of coal-bearing rocks are found at several points in southern British Columbia. The Princeton field includes an area of about 50 square miles. At Princeton, there is an 18½-foot seam of lignite carrying 42 per cent fixed carbon, 38 per cent volatile matter and 16 per cent moisture. At Nicola, seams 6 feet, 10 feet, 5 feet and 12 feet thick, respectively, have been mined. The Nicola coal is a sub-bituminous and analyzes about 47 per cent fixed carbon, 39 per cent volatile and 4 per cent moisture.

Coal has also been found at Tulameen, Kamloops, Hat creek and North Thompson river.

The total area in Vancouver island underlain by coal seams is about 600 square miles. These coal-fields contain some of the best steam coals on the Pacific coast.

The coal of the Comox field is coking bituminous and contains 57.2 per cent of fixed carbon, the highest carbon content of all the Vancouver Island coals. Three seams have been mined in this field.

The Nanaimo field has a productive area of 65 square miles, though the area underlain by coal seams is somewhat larger. The seams vary in thickness. Occasionally a seam containing from 2 to 3 feet of dirty coal carries 30 feet of clean coal at a point only 100 feet distant. Run-of-mine coals from this field run as high as 56 per cent fixed carbon and 43 per cent volatile combustible; commercial samples, 12,470 to 13,160 British thermal units.

The coal-fields of the Queen Charlotte islands are of Cretaceous and Tertiary age. The Cretaceous coals range from semi-anthracite to low-carbon bituminous. The Tertiary coals are lignites. In 1871, mines were opened in the semi-anthracite at Cowgitz, but the coal was so badly crushed that the enterprise was abandoned. This coal analyzed 83 per cent fixed carbon and 5 per cent volatile combustible; fuel ratio, 16.5.

Lignite is found at Alexandria, Quesnel and Prince George on the Fraser, on the Nazco river, Nechako river, Dean river and Lightning creek. Three seams of bituminous coal, possibly a coking coal, aggregating 20 feet in thickness, have been reported on a tributary of Morice river, and three seams on Goat river, a tributary of the Telkwa, aggregate 56 feet in thickness

The most important coals thus far discovered in the northern portion of British Columbia are the semi-anthracites and anthracites of the Groundhog Mountain area. An area of 170 square miles is assumed to be coal-bearing, and contains 8 seams, with an aggregate thickness of 30 feet.

The "actual" and "probable" reserves in British Columbia are: Semi-anthracite, 1.9 per cent; bituminous, 85.4 per cent; low-carbon bituminous, 3.3 per cent; cannel, 2.4 per cent; lignitic, 7.0 per cent.

Lignites have been discovered on Kispiox river, Sustut river, Peace river and Liard river. Bituminous coal has been found near Peace River canyon, and on the Taku river.

The coal production in British Columbia during the period, 1898-1917, was as follows:

Year	Tons	Value
1898	1,263,680	$3,384,858
1899	1,431,101	3,833,307
1900	1,791,833	4,799,553
1901	1,919,488	5,141,487
1902	1,808,441	4,844,040
1903	1,676,581	4,490,844
1904	1,862,625	4,989,174
1905	1,945,452	5,211,030
1906	2,146,262	5,748,915
1907	2,364,898	7,390,306
1908	2,333,708	7,292,838
1909	2,606,127	8,144,147
1910	3,330,745	10,408,580
1911	2,542,532	7,945,413
1912	3,208,997	10,028,116
1913	2,714,420	8,482,562
1914	2,239,799	6,999,374
1915	2,065,613	6,455,041
1916	2,584,061	8,075,190
1917	2,433,888	8,235,716

—*James White* in *Fuels of Western Canada.*

British Industrial Research

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with firms outside the organization. (4) It will have the right to ask for a specific piece of research to be undertaken for its sole benefit at cost price, and, if the governing Committee or Board approve, the research will be undertaken.

The method of assessing the subscription of each firm will be determined after consulting with each industry which may agree to combine, but it is probable that the firms will contribute according to their size.

The whole of the results obtained will remain the property of the Associations making them, but the Government, to safeguard its interests, will keep in its hands two additional powers which will in some measure limit this absolute ownership, namely, the right of veto in case any proposal is made by a Research Association to communicate any results of research to a foreign person or to a foreign corporation, and the right, after consultation with the Association concerned, of communicating the results of discoveries to other industries for their use on suitable terms. The Department will not, however, make any results obtained by a Research Association available to firms or individuals who are eligible for membership of that Association but have not joined.

The skunk is not only a valuable fur-bearer, but also one of the farmer's best friends, for it destroys quantities of harmful insects that would otherwise do enormous damage to crops.—*Fur News.*

Closer Utilization of Household Refuse

Means Suggested for Obtaining the Co-operation of Householders

Refuse collection and disposal have always been difficult problems for large urban centres. In primitive times waste materials of all sorts were simply carried to the outskirts of the town and thrown in piles. When the piles became sufficiently large to threaten to bury the community, the latter moved to other sites and the operation was repeated. But sanitary engineering is now an exact science and the "kitchen midden" of the ancients has been replaced by various forms of destructors, while complex systems of refuse collection are organized in every town and city. Many changes in these methods have been suggested by the war. Closer utilization of hitherto waste products has been found to yield important profits while also helping to conserve basic materials. To accomplish this, refuse of all kinds must be fully classified and each variety kept by itself until it is delivered at the utilization plants. To do this at least two, and better, three refuse cans should be used in every house. Much, therefore, depends upon the individual householder. In a recent issue of the *Journal of the Royal Sanitary Institute* there appears the Henry Saxon Snell prize essay for 1918. The subject is peculiarly timely: "Suggestions for Improvements in Apparatus and Appliances for Dealing with House Refuse". The writer of the essay, Mr. James Jackson, of Birmingham, England, submits a specimen printed card which he suggests should be placed in every kitchen as a constant reminder as to how the householder could co-operate with the local authorities. Below is a copy of the card, an adaptation of which could be used with profit in every Canadian town and city:

CITY OF SPOTLESSTOWN
Salvage Department

Housewives are asked for their hearty and sympathetic co-operation in preventing waste matter from unnecessarily finding its way into the bins, when it at once becomes a charge on the rates.

What YOU can do.

REDUCE the quantity of refuse to be removed.

DON'T put water or any liquid into either bin—it is not fair to the dustman.

DON'T put unriddled ashes into ashes bin—reduce your coal bill and your rates.

DON'T put garden refuse into either bin. Bury it in your garden, or, better still, burn it; the ashes are a valuable manure. In either case your garden will benefit.

DON'T put vegetable refuse into either bin. It is a valuable food for pigs and poultry. If not used thus, it should be buried in your garden or burnt on the kitchen fire.

The ASHES BIN is for riddled ashes and sweepings only.

The SALVAGE BIN is for: *Waste Paper, Rags, Tins and Cans.*

The *Corporation* have power to enforce the observance of these instructions.

HOUSEWIVES! Here is a unique opportunity to help yourselves, your town, and your country, by your co-operation in seeing that these simple rules are observed.

Won't You Assist?

JOHN BULL,
General Manager

Salvage Department,
City Hall.

Getting Full Value of Farmyard Manure

When They Can Be Used, Manure Spreaders Save Time, Money and Effort

Soil mining, or "gypsy" farming has always been too common in Canada. The followers of that industry obtain possession of lands and then proceed to systematically rob them of their fertility. They neglect intelligent rotation of crops and they fail to apply sufficient fertilizer to keep the soil from losing its productive power. Many virgin areas in Eastern Canada have been seriously depleted in this way, but, during recent years, the prairies have been the chief scene of operations for this class of marauders. Thousands of acres of excellent farm lands have been literally laid waste by them and the wasters have moved on to repeat their depredations elsewhere. They are interested only in an impersonal sort of way, in making "two blades grow where but one grew before". They may have heard of "the rights of posterity" but, if they have, they treat the subject as too academic for them to worry over.

Fortunately, however, there are thousands of the other class of farmers, the farmers who endeavour to maintain and to increase the fertility of their farms. During the war, many commercial fertilizers were so scarce and so high in price that more attention was paid to the production, care, and utilization of farmyard manure. Experiments carried out by experts at many of the leading Agricultural Experiment stations have demonstrated that farmyard manure is one of the most important factors in better farming. Only farmers who can afford to burn money can afford to burn or waste their farmyard manure, and the benefit to be derived from it is in direct proportion to the intelligence and care with which it is used.

Mr. C. E. Thorne, Director of the Ohio Experiment Station states, according to a recent issue of *Hoard's Dairyman*, that "eight loads of manure put on with a spreader are worth as much as twelve loads put on by hand". That is the assertion of a recognized authority on the subject. As the *Dairyman* points out, it is easy to estimate "what the loss of one-third of the manure on your farm means, manure being valued at $5.50 per ton according to commercial value of its fertility content".

These estimates should be of great interest to every Canadian farmer who stores his farm yard manure throughout the winter and spreads it on his fields during the summer months only.

—*A. D.*

Commission of Conservation
CANADA

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

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

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OTTAWA, APRIL, 1919

THE CRUCIBLE OF THE FUTURE

The world's ingredients have been thrown into the melting pot of war, material, spiritual, commercial, political, financial, humanistic; and what is going to come out of it when the process is over—who can tell?

On the other hand, the fusion of the great nations in a common lofty ideal, coupled with the steaming off of the dross, may, if properly handled and treated, produce a true metal for carrying out the work of the world on a nobler scale than heretofore.

There is an immense and unprecedented possibility for good if we, and those who are coming after us, are prepared to utilize it.

Unity, concord and high purpose, with sane democracy, will do it.

But the war has shown how dangerously close under the surface of our vaunted civilization still lie savagery, blindness, and insane license.

The war is not over, the victory is not finally won, even though the fighting on the battlefield may be finished. There is yet a dangerous and anxious time before the Nation, as there is before the world, while the metal forged by the war is being fashioned for use.—*Sir Robert Baden-Powell.*

AIRCRAFT FOR FOREST SURVEYS

Among the peace time possibilities of aircraft are forest fire patrol and aerial photography. It is now expected that fire patrols by flying boats will be established during the current year by the British Columbia Forest Branch and by one or more of the Forest Protective Associations of Quebec, assisted by the Quebec Government. The St. Maurice Forest Protective Association is the leader in this respect in the east, as the British Columbia Forest Branch has already proved in the west. It is believed that there are large possibilities also in connection with aerial fire patrol on Dominion lands in the west, through the Dominion Forestry and Parks Branches. Many men, whose experience in aviation overseas should qualify them to express thoroughly practical opinions, state that, beyond question, these things are eminently feasible.

Similarly, there is undoubtedly a large field for developments along the line of aerial photography, both in conjunction with forest protection and independently. The recent address of Colonel Cull before the Geodetic Society of Ottawa showed some of the possibilities of aircraft in furthering the line of work with which the Geodetic Survey is particularly concerned.

The possibilities in connection with forestry work are also very great. There are vast areas of relatively inaccessible lands in all our provinces, where only fragmentary data are available as to drainage and topography, or as to the extent, composition and volume of the forests. As a result of war developments, the importance of our forests in the national economy is now recognized as never before. An adequate knowledge of the character, location and extent of the forests of Canada is essential to the proper administration and exploitation of this vital resource.

The Commission of Conservation made a survey of the forest resources of British Columbia and Saskatchewan, although the data available as to extensive areas were of the most fragmentary character. Similar work in other provinces is planned, as rapidly as the necessary funds can be secured. The prosecution of such projects would be enormously simplified, and the results would be much more accurate and valuable, if necessary work on the ground could be supplemented by systematic surveys made by means of aerial photography. Such surveys might of course serve other public purposes as well. This suggests the extreme desirability of co-operation between all agencies interested, Dominion and Provincial, as well as private.—*C. L.*

KEEP ELECTRIC LAMPS CLEAN

Dirty electric lamps are inefficient and wasteful. A recent investigation in a large establishment disclosed interesting figures in the extent of this waste. A group of lamps with a week's accumulation of dirt showed an average absorption of light of 16 per cent, some of them running as high as nearly 20 per cent. Another group which had been used for three weeks had an average absorption of 22 per cent with a maximum of over 26 per cent. Figuring on this basis, 16 per cent more lamps at the end of one week, or 22 per cent at the end of three weeks, would be required to obtain the same illumination that would have been obtained if the lamps were kept clean. This, of course, meant a corresponding increase in the electric light bill.—*L.G.D.*

WAGE WAR ON RATS

Rats are traditional enemies of mankind. They are the chief carriers of cholera, plague and other epidemic diseases which have at various times in history, wiped out millions of human beings. Fortunately, man's knowledge of science, coupled with his superior cunning, has made it possible to control these scourges. But ceaseless vigilance on the part of the health officials at all ocean ports will always be necessary—at least until rats are exterminated.

Man has another heavy score against these pests. They destroy enormous quantities of agricultural products. It was estimated, before the war, that rats destroyed $75,000,000 worth of such products annually in Great Britain alone. A recent estimate based on war-time prices, places the loss at $200,000,000. The latter figure is practically the same as the pre-war estimate of loss in the United States from the same cause. These animals possess remarkable fecundity, which, when coupled with their natural cunning enables them to thrive and even increase in numbers in a great variety of environments. Every good citizen, particularly agriculturists and grain and food dealers, should wage a ruthless war on these noxious pests.

UTILIZE IDLE WATER POWERS

A waste equivalent to over 660,000 tons of coal per year has been revealed by a water power survey in the state of Massachusetts. These losses occur either from complete absence of development at certain sites or from improper or insufficient development at sites already developed for power. Numerous cases of a similar character exist on some of the rivers of the more densely populated portions of Canada and it is of interest to note what Massachusetts is doing to conserve and derive full benefit from the power being wasted in this manner. The bill presented as a result of the investigation may be summarized briefly as follows:

1. To authorize and encourage mill owners to improve and utilize fully the water resources of the Commonwealth.

2. To provide that after a reasonable lapse of time the Commonwealth may acquire at cost such improvements.

3. To provide, in case of the failure of the mill owners to act within a reasonable time, for the development of such water resources by the Commonwealth for the public good.

4. To authorize co-operation with other States in and through which the rivers of Massachusetts rise and flow or having power which might be made available to the industries of the Commonwealth.—*L. G. D.*

EXPORTS FROM FORESTS

Reports of the Trade and Commerce Department show that, for the year ending November, 1918, Canadian exports of primary forest products totalled $64,281,861. This is an increase of 22 per cent over the previous year. The exports from the forest were very nearly double those from the fisheries, and were 85 per cent of those from the mine. In addition to the primary forest products, consisting mainly of lumber and unmanufactured wood in various forms, wood-pulp was exported amounting to $32,580,619, which wood in manufactured form, not otherwise covered, totalled $826,551. These figures are an indication of the economic importance of Canada's forests, in the development of her foreign trade.—*C. L.*

The County Council, of Middlesex county, Ont., has passed a by-law protecting all birds and game in the county for a period of five years. This action was taken on account of the unscrupulous slaughter of birds and game, and the consequent increase of insect pests.

SETTLEMENT OF SUB-MARGINAL LANDS

An obstacle to successful private colonization is found in the existence of sub-marginal lands; that is to say, lands which, when cultivated, will not give normal returns to labour and capital, and which will still less yield a surplus in the form of rent. These are found probably in every state of the Union, and, in a few states, a large proportion of the land is sub-marginal. It has been estimated that something like one-third of the land in Northern Wisconsin is sub-marginal, although the remaining two-thirds is productive and very much of it highly so. The sub-marginal land is privately owned, very largely, and affords a temptation to the owner to exploit the unsuspecting settler. California and the fruit sections of the country generally give us conspicuous illustration of fraud connected with sub-marginal land. Every traveller in California who is at all familiar with conditions, knows that orchards are planted for two purposes, one for fruit and the other for sale to the "tenderfoot." What are we going to do with sub-marginal land? No complete solution of the problem of sub-marginal land will be attempted here and now, but, in a general way, it may be said that the aim should be to bring it into public ownership and make the best possible use of it. Without entering into all the complexities of the idea of marginal land, it may be remarked that land sub-marginal for private use may be super-marginal for public use. By condemnation it could be secured at its real value. Frequently the land which is sub-marginal for agriculture may have a value for forestry.

The development of agricultural education is one of the most remarkable features of the educational history of the last fifty years. It would take a long paper to tell all the things that are being done to promote theoretical and practical agricultural education. We have gone so far that in many parts of the country every country has its agricultural adviser, while agricultural institutes reach hundreds of thousands. We need to work further along existing lines and to give attention in our agricultural education to the agricultural leader. We have neglected unduly the proper organization of agriculture and have not attempted systematically to provide a suitable labour supply. Recently we have undertaken to provide a more adequate supply of capital, but we still lack a proper proportion of labour, in order to get the right combination of the requisites of production.

As a part of the general plans for colonization, it is suggested that the education features of farm life should be developed. Farms where labour and living conditions are right and where there is good farming should be certified. Moreover, there should be an agency having an interest in the boys and girls who may desire to go on these farms and work for wages.—*R. T. Ely.*

The sugar beet industry has become very profitable in Kent county, Ont. There will likely be a largely increased acreage this year.

Petroleum Resources of Northern Alberta

Interesting Facts and Statistics with Respect to Production and Consumption of Petroleum Products

Up to the present time, oil in considerable quantities has not been found in Western Canada. Respecting the possibility that petroleum will be discovered, particularly in the Viking area and the Peace and Athabaska valleys, the situation may be summed up as very promising.

A small quantity of dark oil obtained in one of the wells in the Viking gas-field is an encouraging indication, and oil has also been found in the Pelican Rapids gas-well. Seepages of oil have been found near Waterton lake in southwestern Alberta, and in the Flathead valley in southeastern British Columbia.

In northern Alberta, there are enormous tar seepages which evidence an upwelling of petroleum unequalled elsewhere in the world. Along the Athabasca river, they extend from Pelican rapids to Fort McKay, a distance of over 100 miles. The known occurrences indicate that there is in sight at least 6½ cubic miles of bitumen, and the petroleum from which it was derived must have been many times greater. While this enormous amount of petroleum has escaped, there must be untapped reservoirs in the Devonian limestones whence it was derived. Similar seepages occur near the Peace and Mackenzie rivers.

Near Peace River Landing, oil has been found in two wells, 900 and 1,100 feet deep, respectively. The first well is reported to have yielded 3 to 4 bbls. per day when oil was struck in the upper portion of the tar sands and to have had a maximum production of about 9 bbls. Drilling, however, was continued through the tar sands, which are about 80 feet in thickness at this point, and a heavy flow of water and gas was struck immediately below the sands.

The second well is in the tar sands and is reported to be yielding about 25 bbls. per day.

In the Sheep Creek district, about 32 miles southwest of Calgary, the production of oil is reported as follows:

Company	Depth of well, feet	Specific gravity (Beaumé)	Production, bbls. per day
Calgary Petroleum Products Co., No. 1 well*	3,920	62°	10
Alberta Petroleum Consolidated	2,720	38° to 40°	25
Canada Southern Co.	2,400	55°	5
Northwest Pacific Co. (when operating)	3,500	38°	4
Alberta Southern Co., No. 1 well	3,200	55° to 56°	10 to 15
Southern Alberta Co., No. 1 well	3,300	58° to 60°	30

The Mid-West, 3,200 feet deep, and the Acme, 3,200-3,300 feet, also in the Sheep Creek district, are reported to have struck oil.

As "commercial" gasolene is 60° to 63° B., the oil produced by the Calgary Petroleum Products, Canada Southern, Alberta Southern and Southern Alberta companies approximates to the fuel ordinarily marketed as "gasolene".

In the year ending March 31, 1917, we imported into Western Canada, for fuel purposes, 95,693,497 gallons of petroleum, valued at $2,738,555. For refining, we imported, in the same year, 35,313,717 gallons, valued at $1,040,047. The discovery of extensive oil-fields in Alberta and Saskatchewan would retain in Canada at least $3,750,000 which we are now paying for petroleum importations and an additional $1,250,000 paid for petroleum products, such as gasolene and kerosene, or,in all, $5,000,000.

In 1917, 312,000 gallons of gasolene and kerosene were recovered from Alberta crude oils. Presumably, part of this production was from petroleum produced during 1916.

During 1917, the production of crude petroleum in Alberta amounted to 8,500 bbls., or 297,500 Imp. gallons.

*Commonly known as the Dingman well.

Mr. Dingman, president of the Calgary Petroleum Products Co., states that the company's oil wells have a combined capacity of 5 million cubic feet of gas per day; that their measurements indicate a content of one gallon of gasolene per 1,000 cubic feet of gas and that, if only one-half the gasolene be recoverable, they could maintain an output of 2,500 gals. of gasolene per day.

—*James White* in *Fuels of Western Canada.*

ABOUT APPEARANCES

Appearances are often deceptive. The poorly dressed individual we sometimes see on the street may not be a vagrant, but a gentleman in hard luck. Similarly, the house that is badly in need of painting may not be the home of slovenly people, but of a family which is financially embarrassed. Nevertheless, it is true, that "the apparel oft proclaims the man". Likewise a man often either makes his own environment or his environment makes him. Paintless, weather-beaten houses, whether in town or country, have a most depressing effect on those who must live in them, or near them. In addition, wood and metal materials rapidly deteriorate if not given a protective covering of some sort. Even whitewash, or a coat of good ochre and oil is better than nothing, but for better service and a wide variety of artistic effects paints are essential.

Making Small Farms Pay

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husking corn (Longfellow and Quebec Yellow) gave 175 bushels of ears and 18 tons of fodder; 16 rows of potatoes, 20 rods long, yielded 80 bushels, one acre of turnips yielded 1,200 bushels; 13 acres of pasture sustained 14 milk cows, 4 yearling heifers and 3 horses. The balance of the farm was in soiling crop, garden, orchard, etc.

A careful account was kept of each department of the farm and below is the result of the year's operations, March 1st, 1918, to March 1st, 1919:

RECEIPTS	
Milk sold	$1,951.72
Live Stock	912.20
Poultry and eggs	139.19
Farm products	80.65
fees	20.00
Prize money, etc.	94.22
Increase in live stock during year, also feed	593.00
Total	$3,790.98
EXPENSES	
Feed purchased	$451.29
Stock purchased	457.04
Repairs, upkeep, insurance, etc.	196.98
Hired help, silo filling, etc.	85.25
Loss on stock	16.00
Interest on investment ($10,000 at 6 per cent)	600.00
Taxes	82.55
Total	$1,889.11
Total income, including increase in live stock of $593.00	$3,790.98
Total expenses, including $196.98, repairs to building, machinery, etc.	1,889.11
Total wages for my wife and myself over expenses	$1,901.87

"In addition to this income, we also had free house, all the vegetables, apples, maple syrup, milk, eggs and fowls that we required. We also had our butter, until Nov. 1st, when we commenced shipping milk to Montreal. These results were obtained under ordinary conditions. While we have a number of pure bred animals, we valued them as grades. From March 1st, 1918, until May, the cream was shipped. From May until Oct. 15, the milk was sent to the condensery. From Oct. 15th until March 1st, 1919, the whole milk was sent to Montreal."

A NEGLECTED FERTILIZER

Many towns and cities have experienced a scarcity of manure since the vacant-lot garden movement has become so popular. The St. Thomas Horticultural Society, a very wide-awake institution, has met this difficulty by collecting and storing annually about 400 loads of pavement sweepings, stable manure and leaves. This is stored in a convenient place just outside the city where it decomposes, being frequently turned to hasten rotting and prevent burning. It is afterwards applied to the Society's boulevard beds and to reclaimed waste areas, whilst some is sold to members. It is important that as much leaves and stable manure as possible be mixed with the pavement sweepings as the latter are apt to be leached out and to consist of a good deal of dirt, not of high manurial value.

POTATO SEED TESTS

Tests by the Ontario Department of Agriculture, last year, showed that potatoes grown from Northern Ontario seed yielded 30 bags per acre more than those grown from Old Ontario seed. New Brunswick seed did not give quite as good results as that from Northern Ontario

Solving Pure Seed Problem in Quebec

Co-operative Seed Cleaning and Grading Plant is Proving Valuable Asset

At Ste. Rosalie, Que., is to be found one of the most unique co-operative enterprises of its kind on the North American continent. It is a plant containing an equipment for the purpose of cleaning and grading seed grain for the farmers of the province. Seed grain and some other farm supplies are also bought and sold.

The capital required for the erection of the plant and the purchasing of the machinery was raised by selling shares at $100 per share, each shareholder being limited to one share.

The need for cleaner and better graded grain for seed purposes has long been felt in Quebec and this plant is intended to meet the need. The cleaning and grading machinery in the plant was made in France and is the very best of its kind obtainable. A fixed charge is made for cleaning and grading.

The cleaning is well done, which is a distinct improvement on old conditions, as there are very few good fanning mills in the district. Wheat is turned out in four grades as to plumpness and size of berry. The best is used for seed and the other grades are used for flour or feed purposes according to the quality. Oats are graded into two grades. The largest and plumpest being used for seed and the smaller and inferior kernels ground for feed. In this way, the proportion of the grain unfit for seed is best utilized by feeding it rather than by sowing. Grass, clover and all cereals are handled in this plant.

A three per cent discount off list prices is made to members and shareholders who purchase seeds or other supplies handled by the Society. Farmers' clubs and other co-operative societies may join the Ste. Rosalie society and receive the same benefits on purchases as individual members. The plant is running at full capacity and it is the hope of the Society that many other farm products and supplies will eventually be handled by them. The profits are being allowed to accumulate for the purpose of enlarging the plant in the near future.

—*F. C. Nunnick.*

COPPER IN MANITOBA

The copper discoveries of Manitoba are rapidly assuming considerable magnitude. Prof. Wallace, Commissioner for Northern Manitoba, states that, in one copper mine, as yet undeveloped, 20,000,000 tons of ore averaging $8.75 a ton in value have been blocked out. He estimates that when railway facilities are available this area will provide employment for 1,000 men for about fifteen years.

These tests will be continued for three years more and an effort will now be made to test the productivity of various soils in the province planted to the same kind of seed.