

Conservation

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Canada's Fisheries

Meeting of the Fisheries Committee of the Commission of Conservation - Many valuable discussions - A report to be issued

How to conserve Canada's fisheries, was the theme discussed by the Committee on Fisheries of the Commission of Conservation on June 4th. Canada has exceedingly valuable fresh water and coastal fisheries, but there are indications of a steady depletion of some important species. This is perhaps especially true of the oyster, the shad and the whitefish. Much valuable information was brought together and presented to the meeting by Dr. Joseph Stafford of McGill University, who spoke on the "Conservation of the Oyster" by Messrs. W. A. Found, and J. J. Cowie of the Department of Marine and Fisheries, who spoke on phases of the Atlantic coastal fisheries. Dr. Howard Murray contributed a paper on "The Needs of the Fisheries of Nova Scotia." Mr. M. J. Patton one on "Whitefish in the Great Lakes," while Premier Mathieson of Prince Edward Island spoke on the oyster industry in that Province.

Copies of the resolutions passed by the Committee, as well as a list of the members of the Committee are given elsewhere in this issue.

A stenographic report of the meeting was made and will be published in book form early in the autumn.

FUR FARMING IN CANADA

INVESTIGATION BEING MADE—REPORT TO BE ISSUED

As announced elsewhere in this issue, the Committee on Fisheries and Game, at its meeting on June 4, passed a resolution approving the preparation of a bulletin on *Fur Farming in Canada*.

Mr. J. Walter Jones, B.S.A., a native of Prince Edward Island, who has made a close study of fur-farming in the United States, has been engaged to carry out the work. Mr. Jones will visit as many of the fox and mink farms in Prince Edward Island, Quebec and Ontario, as time will permit. He will make a close study of the condition of the industry including the cost of the farms and the necessary buildings, the number

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Inexpensive Roadway on Residential Street

Economies in the Construction of Streets

Street planning bears a vital relationship to a city's tax rate. Several European cities have demonstrated the truth of this axiom. In Canada, however, comparatively little attention is given to it. As a result there are many streets in our cities and towns which have roadways either too wide, or of too expensive a construction for the traffic they have to carry. For such errors the ratepayer must foot the bill in increased rents and taxes.

Nature of Traffic Important

It is first of all, important for a city to study the character of the traffic if its several streets will have to bear. Thus, there are many streets which it is obvious will never be required for heavy or general traffic and where the bulk of the traffic will consist of nothing more than delivery wagons. In such cases it is quite unnecessarily expensive to construct wide paved roadways. The roadway in such cases should be say, twenty feet wide with grassy boulevards, planted with shrubs and trees.

Building for Future Growth

In cases where the thoroughfare seems likely to become in time a leading street, the roadway should be constructed so that an extension of its width can be accomplished without any great increase in the cost of construction. It is important where this is done to have the trees so placed that it will not be necessary to move them when the roadway is widened. If this work is begun in good time a city can have avenues of trees growing up to beautify the newer streets as the city expands. The experience of German cities would indicate that well kept boulevards, with properly selected and well set shade trees are not at all out of place on a business thoroughfare. Certainly the effect from the aesthetic standpoint is always improved by shady, well kept boulevards.

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Roadway Rather Wide for Residential Street

Lobster Fisheries of Canada

Sketch of the Industry—Work of the Department of Marine and Fisheries

There are probably 50,000,000 lobsters taken from the coastal waters of Canada every year. During the fishing season, which extends from April 27th to June 30th, roughly, 11,000 men are engaged in actual fishing, and 8,000 people are employed in the 682 canneries. In short, Canada possesses a more extensive and valuable lobster fishery than any other country in the world. Lobster canneries were first established in Canada in 1869, and in that year 61,000 one lb. cans were put up. By 1881 the maximum pack in the history of the industry was reached, when over 17,000,000 pounds were canned. Since that year there has been a decline. In 1898 the production was about 10,000,000 pounds and since 1909 there has been a further falling off.

In addition to the canned lobsters a very important trade is carried on in live lobsters. There is an active demand for live lobsters wherever they can be shipped in cold storage. Anywhere from 100,000 to 120,000 hundredweights of live lobsters are annually shipped by Canadian fishermen.

The Department of Marine and Fisheries has tried a number of experiments in the hope of regulating the lobster fishery with a view to its better conservation. Hatcheries have been encouraged and efforts made to have the fishermen bring the egg-bearing female lobsters to these hatcheries. This has been fairly successful. There are now thirteen lobster hatcheries on the Atlantic coast, and millions of lobster eggs are artificially hatched annually and the young fry planted. This has been found very beneficial, because it saves the destruction of the female lobsters by the fishermen, as well as preserving large numbers of lobster eggs which would be lost if they are deposited in the open sea. There is, however, still a great loss of fry after it is planted. No economical means have yet been devised for preserving the fry until they have reached the grounding stage, before planting. If this could be accomplished, a very great advance would have been made in the conservation of the Canadian lobster industry.

Co-operative Forest Fire Protection

Formation of Maurice Valley Forest Protective Association—Proposed Methods of Working—Similar Organizations in the United States

The adoption of the co-operative idea in forest fire protection is a matter of very recent development on this continent. In Canada, the first beginning has recently been made through the formation of the St. Maurice Valley Forest Protective Association, with headquarters at Three Rivers, Quebec. The membership comprises over 90 per cent. of the limit holders in the St. Maurice valley. The Government of Quebec will co-operate with the Association and will bear a portion of the expense, in recognition of the public interest at stake. An assessment has been levied, with which to start the work of protection. Steps will be taken to establish an efficient patrol of the whole section, placing men along all the larger streams to follow the river-drivers, hunters, fishermen and prospectors to see that they put out their camp fires and smudges and observe the government regulations. These rangers will also see that the settlers burn their clearings only when it is safe, and will compel them to take proper precautions to prevent fire spreading. On the railroads, men on gasoline "speeders" will follow the trains and put out fires started by sparks or hot coals. Look-out stations, telephones and trails will also be constructed, to facilitate the discovery of fires and the transportation of men to extinguish them.

That the maximum of efficiency in forest fire protection is compatible with the minimum of expense has been demonstrated by the twelve organizations of timberland owners in Washington, Oregon, Idaho and Montana which comprise the Western Forestry and Conservation Association. During the summer of 1911 this association provided for the co-operative patrol of 16,000,000 acres of timberland at a cost, including the construction of roads, trails, telephone lines, etc., of less than two cents per acre. The fire loss, as a result, was practically negligible. During the very bad season of 1910, the fire loss on the lands of the Association was kept down to less than one-half of one per cent. More than 400 patrol men were employed to guard the stand of not less than 400 billion feet of timber on these lands. During the two years the Association has been in existence, forest protection has become a living issue on the Pacific Coast. The laws have been strengthened and state appropriations doubled. The general public has become awake to the subject and convictions are secured for violations of the laws. In short, more has been accomplished during the two years of the Association's life in the way of securing definite action by states

and the private owners of timber lands than in all the year previously.

Co-operation in fire protection is a modern development, and other portions of Canada may well follow the example set by the timber owners of the St. Maurice valley.

Railroads Are Using Oil

The consumption of fuel oil in the United States is steadily increasing, according to a report by David T. Day of the United States Geological Survey, on the production of petroleum in 1910.

During that year the quantity of fuel oil consumed amounted to 24,586,108 barrels, as compared with 19,939,394 barrels in 1909, an increase of 23.3 per cent. In the vicinity of oil fields or where cheap water transportation can be secured, as along the Pacific coast, the cost of operating with oil is less than with coal. The use of oil as a source of motive power for railroads offers, aside from the use of electricity, the only certain guarantee of immunity from the hitherto generally prevalent fires along railroad rights of way. The adoption of oil as fuel on the C. M. and St. P. lines west of Butte and on the Great Northern west of Leavenworth, with a proposed extension eastward to Spokane this summer offers great encouragement for the adoption of similar measures by the railroads of Canada on portions of their lines. Already the Canadian Pacific railway announces the establishment of oil-burners, effective July 1 on that portion of its line in British Columbia between Kamloops and Field. The Esquimault and Nanaimo railway running northward from Victoria on Vancouver Island is equipped with oil burning locomotives. The economy in the use of oil along the Pacific coast is further shown by its adoption, in place of coal, on the Canadian Pacific railway and Grand Trunk Pacific steamers. No one thing would go so far to prevent continued destruction of the magnificent forests of British Columbia as the use of oil on locomotives running through forested portions of that Province. The hardship upon the railroad companies would not be material, and in comparison with the tremendous public interest at stake would be infinitesimal.

The Meaning of Conservation

Conservation does not mean forbidding access to resources that could be made available for present use. It means the freest and largest development of them consistent with the public interest and without waste. A bag of gold buried in the earth is useless for any purpose. So is an acre unutilized, a mine unopened, a forest that bars the way to homes and human happiness.—*Gas. J. Hill.*

Conservation of Mineral Resources

Water-powers and the products of the soil and forest may be wasted and partially destroyed, but, by careful and long continued treatment, a re-creation is made possible; by the extension of our forests and the judicious care of our soils and waters we may be assured of timber, water and abundant crops for all time.

The ores or minerals, on the other hand, are the products resulting from the action of different forces in nature extending over long periods of time which cannot be measured in terms of life. Hence, when such deposits are exhausted they cannot be replenished. The coal, when once burned, goes into the air and cannot be reclaimed. It is true that the metals saved are utilized without being, like coal, entirely and irrevocably destroyed in use. Gold and silver serve mainly to increase the stock of the precious metals upon which the monetary systems of the world are based. They are, to a certain extent, dissipated and lost beyond recovery by the abrasion of coins and use in the arts.

Factors to be noted

In considering the conservation of mineral resources it is of the utmost importance to observe the following facts:

1. There will be no mineral industry without profits; that is to say, no mining company will mine or extract these resources in such a manner as to entail continuous loss to itself in order to conserve such resources for the future.

2. The present generation has the power and the right to use efficiently so much of these resources as it needs. The past has proven that the needs increase with the extension of our industries, and more rapidly than the population.

3. The nation's needs will not be curtailed. The people will take what they require.

Conservation of our mineral resources may be accomplished by investigation, education and legislation. Investigation should be carried on to determine the nature and extent of each of our important resources; the rate at which each resource is being utilized; the nature and extent of the waste in mining, extraction and use of each mineral product; how this waste can be prevented; to discover and develop substitutes which may take the place of products of importance, the supply of which is limited; to discover methods for utilizing by-products or other materials for which, under existing conditions, there is no commercial demand and which are therefore wasted. If, from time to time, the policy and action of individuals and corporations are such that wasteful methods are used in order to make large financial profits, regardless of the rights

of the future, such action should be restrained by legislation. Report on *Lands, Fisheries, Game and Minerals.*

Economics in Street Construction

(Continued from page 1)

There is no reason why we should not have our towns and cities beautiful and picturesque. It can be done economically by adopting wise and carefully planned methods of road construction. The authorities of many cities and towns in Canada have yet to realize that while streets should be wide—not less than 60 feet—yet it is not essential that they should all be planned or paved alike. The important factor in deciding such points is the amount and character of the traffic which passes along, or will in future pass along, any given streets.

The illustrations on the preceding page indicate the advantage of wide boulevards and comparatively narrow roadways, where the street traffic is light. These typical English suburban streets are not only beautiful, but are economical both in the matter of construction and of maintenance.

WHITEFISH HABITS

Perhaps the most important characteristic of the whitefish is that it is local in its habits—that is, its movements are pretty well confined to a limited area of water. From this a very important corollary follows viz., that we must hold ourselves responsible for depleting our own waters of this fish. We cannot say that the whitefish are disappearing from our side of the lakes because the United States fishermen are catching them all, for their fishermen are not allowed on this side of the international boundary line. Moreover, when this fact is known, we may rest satisfied that when we plant fry on this side of the lakes the fish into which they grow will be caught by Canadian fishermen. Because we cannot get our neighbors to agree to international fishery regulations is no reason why we should not conserve our whitefish supply.

—From an Address before the Fisheries Committee of the Commission of Conservation.

FUR FARMING

(Continued from page 1)

and breed of the stock on the several farms, and the sales that have been made within recent years. In addition the experience of fur-farmers in the United States and Russia will be studied. The results of this work will be embodied in a well illustrated report which will be published late in the year. It is hoped that the investigation will do much towards placing the industry on a sound financial basis, and tend to check the over speculation in breeding stock which has been so common in the past.

The Rotation of Crops Restores Humus

Single Cropping a Failure—Results of Experiments in Minnesota—Value of Humus to the Soil

Humus is a very important element of soil fertility. It is the partially decomposed animal and vegetable substances (organic matter) found in the soil or supplied in the form of barnyard manure or by plowing under clover and other crops which add fibre to the soil.

If crops are not rotated, those fields that are constantly in grain crops will have their humus supply exhausted, and the evil results that follow such exhaustion will be brought on. For the first few years after new soil is broken, there is likely to be an abundant supply, but sooner or later, with the single cropping system, the supply of humus in the soil becomes deficient. That the single cropping system depletes the supply of humus and that the systematic rotation of crops maintains or increases the supply can be proven with mathematical precision. Investigations by the Minnesota Experiment Station have been carried on for a number of years to compare the influence of continuous grain cropping and rotation of crops on the humus content and fertility of soils. On one plot each, wheat, corn, oats and barley were grown continuously for four years. On another plot the following rotation was practised: wheat, clover, wheat and oats. On still another plot oats followed by clover, barley, and corn (with manure) were grown.

The gain or loss of humus during four years in the soil of the different plots is shown in the following table:

GAIN OR LOSS OF HUMUS IN SOILS UNDER DIFFERENT SYSTEMS OF CROPPING.

System of Cropping	Humus at the beginning of the experiment and at the end of 4 years.			Gain (+) or loss (-).
	Per Cent.	Per Cent.	Per Cent.	
Plot 1, wheat continuously	3.30	3.00	+ .30	
Plot 2, rotation (wheat, clover, wheat and oats)	3.30	3.50	-.20	
Plot 3, rotation (oats, clover, barley, and corn)	3.30	3.50	-.20	
Plot 4, corn continuously	3.30	3.10	-.20	
Plot 5, oat continuously	3.30	3.08	-.22	
Plot 6, barley continuously	3.30	3.10	-.20	

Since humus is one of the principal sources of nitrogen in the soil, the variation of the humus content will affect to a marked extent the nitrogen supply. In every plot in the above experiments where grain was grown continuously, there was a distinct loss of nitrogen. In both plots where rotations were practised there was a distinct gain of nitrogen.

Humus also has an influence upon the available potash and phosphoric acid in the soil. Humus forming materials, such as green manure and barnyard manures, have the power, which they de-

compose in the soil, of combining with the potash and phosphoric acid of the soil and thus converting them into forms which are easily made use of by the plants.

Humus increases the water-holding capacity of soils. In order to produce a ton of dry hay on an acre of land, it is necessary that the growing grass crop pump up from that acre approximately 500 tons of water. In order to supply this enormous quantity of water, the soil must not only be in a condition to absorb and hold water well, but it must be porous enough to permit water to flow from soil grain to soil grain. One ton of humus will absorb 2 tons of water and give it up readily to growing crops. Not only that, but the shrinkage of the decaying particles of organic matter and the consequent loosening of soil grains keeps the soil open and porous.

Humus helps to control blowing soils. The more organic matter a soil contains the greater will be its cohesion, not only because of the direct action of the organic bodies themselves, as manure well mixed with the soil, or the root fibre from a sod plowed under, but also because the soil will be more moist as above mentioned.

Experiments have shown too, that soils well stocked with humus are able to give much better returns for fertilizers applied than soils deficient in this substance.

Resolutions Passed by Fisheries Committee

After hearing papers by experts and others interested in fishery problems the Fisheries Committee of the Conservation Commission, which held its meetings in Ottawa on June 4th and 5th, adopted the following resolutions:

Whitefish Depletion]

Whereas the whitefish is recognized as one of the most valuable of Canada's food fishes; and

Whereas the average annual catch of this fish for the past five years in Lake Huron and Georgian Bay is approximately one-third the average catch twenty years ago (1886-1890), and in Lake Superior, one-half what it was twenty years ago; and

Whereas no whitefish fry has been planted in Lake Superior and a yearly average of only about 700 per square mile of whitefish area in Lake Huron and Georgian Bay for the past five years, while in Lake Erie and its tributary waters a yearly average of about 30,000 fry per square mile of whitefish area has been planted during the past five years and the average whitefish production of that lake for the same period has increased to double what it was twenty years ago;

Therefore be it resolved that this committee, while recognizing and appreciating the value of what has already been undertaken by the Department of Marine and Fisheries, urge upon the Dominion

Government the necessity of planting at the earliest practicable time whitefish fry in Lake Superior and in Lake Huron and Georgian Bay in sufficiently large quantities to prevent the depletion of those waters.

Oyster Culture

Resolved that the Dominion Department of Marine and Fisheries be urged to carry on demonstration and research work looking toward improved methods of oyster culture especially with reference to the proper time of putting out culch in order to procure the necessary supply of spat, and also to carry on further demonstration work in connection with the formation of oyster beds in grounds not now productive of oysters and to assist in the introduction of improved methods in live oyster beds.

Fisheries Statistics

Resolved that the Committee express its approval of the action of the Department of Marine and Fisheries in endeavoring to secure more accurate fisheries statistics; and further

Be it resolved that the Department be requested to publish each year in its annual report a statement, in readily available tabular form, of the number of fry of various kinds of fish deposited by it in each stream and body of water where such are planted in Canada.

Resolved that the Committee approve the action taken to prepare a Bulletin on Fur-farming in Canada.

Agriculturist's Itinerary

Arrangements are being rapidly completed for the demonstration farm work that is being carried on by the Commission of Conservation, during May, and the early part of June, Messrs. F. C. Nunnick and John Fixter visited points in the Maritime provinces and in Quebec. Ten demonstration farms were selected in the former, and six in the latter. In addition, the alfalfa experiments carried on in Quebec during 1911 will be extended. The farmers are in general appreciative, and will give what assistance they can to make the work a success.

At the present time Messrs. Nunnick and Fixter are selecting demonstration farms in Ontario, where nine farms will be selected. Their itinerary is given below:

- June 21 Lanark, Perth
- " 24 Essex, Essex
- " 28 Norfolk, Simcoe
- July 2-5 Waterloo, Galt
- " " " " " " " " " Elmira
- " 8-10 Ontario, Brooklyn and Cannington
- " 11-12 Dundas, Morrisburg

Burned to Death

Three hundred and seventeen people were burned to death in Canada last year. For the first four months of 1912, seventy-seven people lost their lives in this way.

The Fishery Act as Applied in Alberta

The statement which appeared in Saturday's *Herald* that the fishery act is being broken in the province is, as everyone knows who is interested in angling, very near the truth.

In a measure the postponement of the opening of the season this year, from February 12 to July 15, has been responsible for this state of things. The change of dates was not made sufficiently public by the authorities concerned, and a good deal of confusion has existed in the minds of local fishermen on the subject. A reference to the queries sent in to *The Herald's* query column reveals the fact that one question in every three has referred to fishing regulations in some form or other upon which, in most cases, a misunderstanding was apparent.

With respect to the license many ardent fishermen are waiting to see if the act of this year is to be enforced before they obtain one. The fee is a small one, but small as it is, all those who delight in the art immortalized by Isaac Walton, would like to think they are getting value for their money. To a man they would like to feel that the act will be enforced, and are of the opinion that it is very absurd to the contrary is on the spot authorized to enforce it.

For this omission the Department of Marine and Fisheries is certainly to blame. In southern Alberta there is not a single inspector of any sort, and to force a citizen of Calgary to send all the way to Fort Qu'Appelle, Saskatchewan, to get a license to fish in the Bow at Calgary is another absurdity.

It is astonishing that the world gets no wiser as it gets older. We in Canada have either seen or heard, of the waters of other countries, through poaching in all its forms, being robbed of their wealth of life. We have heard the same story with respect to big game; game that when once extinct is not made over again, and yet we pay no attention to these invaluable objects lessons.—*Calgary Herald.*

Medical Inspection of Schools

In referring to the medical inspection of school children in an article in the May number of the *Fortnightly Review*, Mrs. Tweedie says:

"General medical inspection of the school children (Great Britain) is being tentatively introduced. A sad lesson is being taught from the medical inspection of our industrial population, where among six million school children 40 per cent. suffer from bad teeth, 10 per cent. from defective sight, 40 per cent. from uncleanliness, and a large percentage from malnutrition."

Oyster Farming

Regeneration of an Industry—
Scientific Methods must Supplant
Exploitation—Work of
Dr. Stafford

Oyster fishing must give place to oyster farming. The selfish exploitation of the valuable Canadian oyster beds in the early days of the industry has rendered this an absolute necessity if the fisheries are to be saved from complete destruction. Even under natural conditions the death rate amongst oysters is exceedingly heavy. It has been estimated, that in order to maintain the oyster population under natural conditions, the female oyster must deposit something like 16,000,000 eggs every year of her adult life. This indicates not only the magnitude of the death rate, but something of the magnitude of the causes which operate to bring about such a death-rate. Centuries of struggle have fitted the oyster to hold its own against its many natural enemies, but where man with his reasoned methods of fishing has interfered, depletion is sure to follow.

Consequently it has become necessary not only to pass restrictive legislation, but to take steps to maintain the oyster beds by artificial means. Although oyster culture has been practised for many years it is only comparatively recently that the life history of the young oyster has been traced.

Work of Biologists

American biologists first succeeded in propagating oysters by artificial fertilization of the eggs in 1879. This success led to extensive and eventually successful experiments in the raising of oysters.

But while the results of this research were of great value there was still one important period in the life of the oyster that was not clearly understood. There are roughly three important events in the life of the oyster that are of practical use to man. (1) The spawning or depositing of the eggs; (2) the swarming or swimming of the larvae; (3) the spatting or fixation of the full-sized larvae onto shells or other objects. Of these, a knowledge of the second is perhaps of most value in artificial oyster culture. This is so because it enables the culturist to determine more exactly when cultch should be planted for the oyster spat. Cultch, to be of any value, must be clean and fresh.

If planted too soon it becomes slimy before the spat settle; if not soon enough, it is worse than useless. By knowing the exact time when the maximum number of larvae swarm, the proper time for the planting of the cultch can be determined. This point was cleared up by the work of Dr. Joseph Stafford of McGill University. As a result of his research the catching of spat has been removed from the region of doubt and caprice to that of regularity and certainty. Dr. Stafford's

forthcoming report on oyster culture to be published by the Conservation Commission will explain in detail his discoveries in oyster culture. It should do a great deal to make oyster farming an increasingly valuable Canadian industry.

CANADA'S WATER AREA

"Canada has an estimated water area of 125,755 square miles. Hence as compared with the estimated area of 52,630 square miles of water area in the (continental) United States, Canada is seen to have nearly two and one-half times the water area possessed by the States. The estimated water area of Ontario is 40,354 square miles exclusive of any portion of the Great Lakes, or any arm of the sea, and this area is over 75 per cent. of the total water area of the United States, exclusive of Alaska, the Philippines, and other external possessions."

The Water-Powers of Canada.

It should be remembered however, that while such computations and comparisons are interesting and valuable for some purposes, they are apt to be very misleading, especially if associated with water-power resources. Water is not necessarily water-power.

Reports to be Issued

Some Particulars With Reference to Forthcoming Reports of the Commission

During the early part of July a report on *Animal Sanctuaries in Labrador* will be issued by the Commission of Conservation. The report is a supplement to an earlier report on the same subject, both of which have been prepared by Lt.-Col. Wm. Wood.

Late in August a report will be issued on *Forest Conditions in Nova Scotia*. The report will give the details of a reconnaissance forest survey of that Province which was carried out by Dr. B. E. Fernow, assisted by Dr. C. D. Howe and Mr. J. H. White.

Early in the autumn a statistical report on the *Water-works of Canada* will be published. This report is being compiled by Mr. Leo G. Denis, Hydro-Electric engineer for the Commission of Conservation.

About the same time it is expected that the proceedings of the recent meeting of the Fisheries' Committee will be published in book form.

A little later a pamphlet on *Oyster Culture* by Dr. Joseph Stafford will be published. In this report Dr. Stafford will tell of his valuable contributions to the science of oyster culture.

Mr. J. Walter Jones' report on *Fur Farming in Canada* will also be published before the end of the year.

The catch of shad in Canada has fallen from 10,707 bbls. in 1899 to 5,242 bbls. in 1910, a decrease of over 50 per cent. in eleven years.

Hudson Bay Railway

Features that will Concern the
Freight Department of the
New Road—Resources
of Keewatin

Railroads must have traffic both coming and going to be financial successes. This is a maxim in railroad operation. It is also a maxim that railroads must not be entirely dependent on interline traffic.

There are those who would tell us that in both these respects the proposed Hudson Bay railroad falls short. It will be built through a country which pessimists tell us is incapable of producing any natural product in commercial quantities. But the pessimists may be mistaken. They were mistaken some thirty years ago when they took to prophesying for the Canadian Pacific railway.

What then, are some of the conditions? In the first place it should be noted that only rough and imperfect estimates have as yet been made with respect to the commercial potentialities along the proposed line.

Nevertheless it is known that some of the lakes have in them abundance of whitefish and pickerel, so that the fishery industry should be very profitable as soon as the road is built. Again there is still considerable game, although more stringent regulations will soon be necessary to prevent exploitation. Further, there is reason to believe that the Keewatin Lake country may one day rival the Muskoka Lake region as a tourist resort. The timber resources are not of great value except for fuel, pulpwood, and mining purposes. Improved drainage would not only improve the forest growth in many localities but would make possible the growth of vegetables and small fruits in abundance.

But there is another source of traffic of more than special note of which the Hudson Bay road should eventually hold a monopoly. It is perhaps not common knowledge that the northern portion of Keewatin is rich in minerals, especially copper. It has even been stated that in all, there is, approximately, 250 square miles of such prospects on the mainland, southwest of Baffin island. The rock formations are of the same character as those found everywhere in the metalliferous regions of Eastern Canada. Further, at the present time New York copper magnates have men at work in these very regions, staking up everything that may prove capable of producing copper. To make mining possible a means of shipping ore to smelters must be secured. At present the only outlet is by way of Hudson Strait, and this is available for only some four months in the year. Here, then, is where the Hudson Bay line should secure much of its returning freight traffic. It is a long haul, but it is not as great a problem as with the development

of the route to Dawson. Thus such a class of freight would pay there need be no doubt. The wealthiest railroad companies in the United States are large carriers of mineral ores. Over 66 per cent. of the traffic carried by the Pennsylvania Railroad, the largest freight carrying road in the world, is made up of minerals.

Thus the new grain outlet for the West—the Hudson Bay railway—may be made not only to pay expenses, but dividends.

Committees of the Commission of Conservation

Committee on Fisheries, Game and Fur-Bearing Animals.—Dr. C. C. Jones, Chairman; Hon. O. T. Daniels; Hon. J. K. Fleming; Hon. W. H. Hearst; Hon. J. H. Howden; Hon. J. A. Mathieson; Dr. Howard Murray; Dr. J. W. Robertson; Hon. W. R. Ross.

Committee on Forests.—Senator W. C. Edwards, Chairman; Mr. Frank Davison; Dr. B. E. Fernow; Mr. John Hendry; Hon. Robert Rogers; Mr. W. B. Snowball, and the ex-officio Members of the Commission.

Committee on Lands.—Dr. J. W. Robertson, Chairman; Dr. George Bryce; Hon. Martin Burrell; Mgr. C. P. Choquette; Mr. F. Davison; Mr. E. Gohier; Dr. C. C. Jones; Hon. Benjamin Rogers; Dr. W. J. Rutherford; Dr. H. M. Tory and the ex-officio Members of the Commission.

Committee on Minerals.—Mgr. C. P. Choquette; Dr. Howard Murray; Mr. John Hendry; Hon. W. B. Nantel, and the ex-officio Members of the Commission.

Committee on Press and Co-operating Organizations.—Mr. J. F. Mackay, Chairman; Hon. Jules Allard; Dr. Howard Murray; Dr. George Bryce; Dr. H. M. Tory.

Committee on Public Health.—Sir Edmund B. Osler, Chairman; Hon. H. S. Bédard, and; Hon. J. A. Calder; Hon. Martin Burrell; Sir Sandford Fleming; Dr. Cecil C. Jones.

Committee on Waters and Water-Powers.—Hon. H. S. Bédard, Chairman; Hon. Jules Allard; Hon. J. K. Fleming; Hon. W. H. Hearst; Mr. C. A. McCool; Hon. W. R. Ross.

The ex-officio members of the Commission who are attached to the Committees on Forests, Lands and Minerals are as follows: Hon. Martin Burrell; Hon. Robert Rogers; Hon. Wilfrid B. Nantel; Hon. John A. Mathieson, K.C.; Hon. O. T. Daniels; Hon. James K. Fleming; Hon. Jules Allard; Hon. Wm. H. Hearst; Hon. James H. Howden; Hon. James A. Calder; Hon. Arthur L. Sifton; Hon. Wm. R. Ross.

The rural population of Canada in 1911 was 3,924,394 and the urban, 3,280,444. The former shows an increase of 62.25 per cent since 1911, and the latter of 17.16 per cent.