LATENT NATURAL RESOURCES OF THE DOMINION IMMENSE

University of Toronto Professor Urges Developments Before Commons Committee on Scientific Research

MANY BY-PRODUCTS

That Canada possesses natural resources, which, if rightly developed would make her one of the most important of industrial countries, is well known to scientists. All that is required is that these should be developed. Addressing the Special Committee of the Canadian House of Commons on Scientific Research Prof. J. C. McLennan of the University of Toronto, said on this subject:—

"Perhaps I may be permitted to refer briefly to some of the consequences of the development of hydro-electric powers in Canada. We have, as you know, already developed upwards of 2,305,310 h.p. cut of a possible 19,000,000 h.p. in Canada. Judging from the reports to hand it will not be long before an additional 1,000,000 h.p. will be available.

"In general, when a power has been developed in the past, the supply of energy rendered available was far in excess of the requirements of the local community for light and mechanical power in manufacturing industries. This state of affairs has led to the erection of extensive and important electro-chemical works which need large blocks of cheap power to meet their technical requirements. Examples of this development are found in the Niagara peninsula, and in the developments on the St. Maurice river in Quebec.

"Among the great works in the Niagara district a number are worthy of special mention. The American Cyanamide Company, which also has extensive works at Muscle Shoals, Alabama, has a capacity in its Canadian plant for producing about 64,000 tons of cyanamide per annum. Among its products, in addition to cyanamide, are ammonia, nitric acid, ammonium, nitrates, cyanides and argon. It has recently erected works on the New Jersey side of New York harbour for the manufacture of ammonium phosphate, sulphate of ammonia and ammoniacal liquor. The supply of cyanamide for the New York works hitherto has been drawn largely from Canadian works, but the supply will now be supplemental by the product made in Alabama. The phosphate rock used in making ammonium phosphate, I may add, comes from a mine the company recently acquired and is operating in Florida. There is also the Canadian Alexite Company, whose product is carborundum, and the Acheson Graphite Company, which supplies large graphite electrodes for electric furnaces.

"The Riordon Pulp and Paper Company has developed a plant for manufacturing calcium chloride from lime and salt for bleaching purposes, and as a by-product it will soon be in a position to produce caustic soda to the extent of about 35 tons per month.

"In the River St. Maurice district we have at Grand Mere Falls, the Laurentide Pulp Mills, producing about 250 tons of paper a day. At Shawinigan the Northern Aluminium Company and the Belgo-Canadian Pulp and Paper Company have very extensive works. The Shawinigan Electric Metals Company is a product of the war, and produces large quantities of magnesium of a guaranteed minimum purity of 99·5 per cent.

"The Canadian Carbide Company and the Canadian Electrode Company have large plants as well; but of all the developments which have taken place at Shawinigan the activities of the Canadian Electro Products Company, are, from a scientific point of view, probably the most interesting. This company, under the direction of Mr. H. W. Matheson, has developed a process for making acetic acid, acetone, and allied chemicals synthetically from acetylene gas. Its present plant, which is the largest of its kind in the world, was commenced in May, 1916, and the first acetone was turned out in December of the same year. The Complete plant consists of twelve buildings, representing an investment of approximately $2,000,000.

PERCENTAGE OF HELIUM.

"In 1903 it was observed that many of the natural gases of Canada contained a small percentage of helium. In the spring of 1916, it was found that the largest supply of natural gas in Canada, namely, that located at Bow Island, Alberta, contained a little over 0·36 per cent of helium. This is a comparatively small, and apparently insignificant amount, and yet I may tell you that this wonderful gas was so rare and so costly, that at pre-war prices, the value of the supply of it which escaped into the air from the furnaces and stoves of Calgary and other houses on the pipe line, was $50,000,000 per day. By the developments which have taken place, during the past two years, the cost of producing the gas in a pure state, has been reduced roughly 100,000 times. Owing to the advance it became possible to use this gas in place of hydrogen in lighter than air aircraft. With the buildings and plants projected by the Admiralty and the authorities of the United States, we should, had the war continued, been able, by June of this year, to produce about 2,000,000 cubic feet of this gas per month for use in our balloons at the front. This would have meant the creation of a great industry in Canada.

"Although it will not pay to use the gas for balloons under peace activities, every effort is being made to develop technical uses for this gas, and it is possible that it may yet be required in large quantities for the production of gas-filled lamps, and other articles of commerce.

"In a Technical Research Institute, or in institutions allied to it, such technical possibilities can be worked out. Will you encourage your scientific men to take part in this development?

"Perhaps you will permit me to refer to one other possible line of development during the search for helium. It was found that practically all the natural gases issuing from wells situated in the Fraser Valley, British Columbia, or from those on the islands of the Gulf of Georgia, consisted of pure nitrogen. Those gases were, of course, non-inflammable, and were considered on that account, by those having to do with them, of no particular value.

NITROGEN FROM WELLS.

"In the prduction of cyanamid and cyanides you know that vast plants are required to extract the nitrogen from the air. If it should turn out that the supply of nitrogen which can be drawn from the wells in the Fraser Valley is considerable and permanent, you have in this resource a basis for the production of cyanides and fertilizers on the Pacific Coast. At such places as Stave Lake you have large blocks of electric power either developed or developable. In the neighbourhood you have large deposits of crystalline marble and coal as well. The condition are, therefore, favourable. Of course the land in the Fraser Valley is exceedingly fertile now. It will not, however, always remain so and artificial fertilizers will be required in large amounts. In the meantime the lands in the Sacremento Valley and those in the northwestern portions of the United States, afford a market for any supplies that may become available. China, too, use large amounts of aritficially-made fertilizers.

"Here then are wealth producing industries that can possibly be developed with great profit to our country.

"Many more possibilities might be referred to, but from what has been stated you will clearly see enough that scientific knowledge, when backed by imagination and supported financially by our people, should be of the greatest service in the upbuilding of our industrial life."

Buy Thrift Stamps for children.

CANADA HAS 26,958,411 CUBIC FEET COLD STORAGE

About 190 Cold Storage Warehouses in Dominion all Equipped with Mechanical Refrigeration Except Few

The following, from a summary of an address on the subject of Cold Storage Facilities in Canada, delivered by Mr. J. A. Ruddick, Dairy and Cold Storage Commissioner, Department of Agriculture, before the Select Standing Committee of the House of Commons on Agriculture and Colonization, is taken from the August issue of the Agricultural Gazette of Canada, published monthly by the Department of Agriculture:—

There should be ample storage facilities for the handling of dairy produce and meats in the localities where these articles are produced. The abattoirs of the country provide their own facilities for the chilling or freezing of meats as the animals are slaughtered. The largest cheese factories and creameries are also fairly well equipped in this respect. There is also required good refrigeration car services with a sufficient number of cars of the right type to carry the products in proper condition. For the export meat trade there is also required terminal warehouses where refrigerator cars may discharge their freight close to the ocean berths. We also require suitable refrigerator space on the steamers if our overseas trade in perishable food products is to be fully developed.

COLD STORAGE WAREHOUSES.

There are about 190 cold storage warehouses in Canada. All of these warehouses are equipped with mechanical refrigeration, except a few very small ones in which the crushed ice and salt system of refrigeration is used. Not including the smaller plants used in connection with retail shops, we have in Canada a total of 26,958,411 cubic feet of refrigerator space. There are also quite a large number of smaller private storages running from about 2,000 cubic feet to as high as 20,000 cubic feet capacity. These provide about 758,000 cubic feet of space making a total of 27,717,211 cubic feet available for cold storage of meat, fish, dairy, and other products.

REFRIGERATOR CARS.

The several railways of Canada have a combined total of 4,459 refrigerator cars, made up as follows:

Railways.	Ordinary cars.	Brine tank cars.
Canadian Pacific	504	1,931
Grand Trunk..	965	200
Grand Trunk Pacific ..	39	195
Canadian National.. ..	*625	
Total..		..4,459

*Kind not specified.

The Canadian Pacific Railway has also 100 cars equipped for use on express trains.

TERMINAL WAREHOUSES.

The cold storage warehouses at Montreal, Que., and other places fill the requirements to some extent. They meet the needs of the dairy produce trade fairly well except in the matter of economical handling. A large cold storage warehouse now under construction by the Harbour Commissioners at Montreal will be situated on the docks, will have track connections with all the railways, and will have at least one steamer berth where goods can be loaded direct. The location is very central, being close to present produce district. Provision will be made for unloading directly from the cars into the warehouse and from the warehouse direct to the steamers. This warehouse will have a total capacity of 2,000,000 cubic feet and will cost in the neighbourhood of $1,500,000.

OCEAN REFRIGERATION.

Until overseas transportation becomes normal again there may be some shortage in refrigerated space for trans-Atlantic shipments. Before the war there were forty-five steamers with refrigerated space sailing from Canadian ports to the United Kingdom and four to South Africa, with a total refrigerated capacity of 1,072,476 cubic feet. There were also eighteen steamers equipped with 800,000 cubic feet of cool air space suitable for cheese, bacon and apples. For the current season the indications are that there will be only twenty steamers as against forty-five going to the United Kingdom and one against four to South Africa, having a total refrigerated capacity of 375,212 cubic feet of space which is less than one-half of what was available before the war. Ten steamers are equipped with cooled air compartments, with a total of 159,800 cubic feet capacity as against 800,000 cubic feet before the war. The shortage is accounted for by the sinkings by submarines and the present use of boats carrying large accumulations of meats and dairy produce from Australia and New Zealand.

The Department of Agriculture, through the Dairy and Cold Storage Branch, undertakes the inspection of refrigerated cargo on ocean steamships sailing from Canada. This service has been in operation since 1900. A number of inspectors are stationed at Montreal to watch ships being loaded with perishable products chiefly of those kinds that are carried in refrigerated space. Thermographs are placed in different parts of the ship where perishable products are carried. These instruments automatically record the temperature continuously during the voyage. When a ship arrives at a United Kingdom port another inspector secures the charts and thermographs and returns them to Montreal. Copies of the charts are made available to any person interested in the shipments. The Dairy and Cold Storage Branch has records covering practically every shipment that has been made for the last twenty years.

MOVEMENT AGAINST PUBLIC HEALTH LAWS

Example Given of Propaganda Meant to Frustrate Health Regulations

Health authorities and workers in Canada should be alive to the danger of insidious propaganda now being carried on in the name of religion to emasculate the entire public health programme. The movement is not so in evidence in the Dominion as in other countries, but it is insidiously pursuing its nefarious and deadly work.

The most recent manifestation of this "Cult" was the introduction into the State Legislature of Minnesota of a Bill entitled "To Prohibit Compulsory Medical Examination and Treatment—Except in Certain Cases, Without their Consent and, in Case of Minors, Without the Consent of their Parents or Guardians, and Prescribing Remedies Against, and Penalties for, Violation thereof."

The Bill failed of passage, but the public are cautioned against a movement of this kind by which the physical examination of cases of communicable disease, even in epidemic form, or the powerful agent of quarantine itself, would be prohibited and penalized.

Under the sacred name of religion many prejudices have taken shelter and questionable things have been done in the past. This attempt to frustrate the safe-guarding of public health is the most modern form of this hypocrisy, as stated in an article in the current issue of Conservation of Life, an official publication of the Commission of Conservation.