

The Great Wealth of Canada's Hinterland



HERE has always been a romantic interest in the great hinterland of Northwestern Canada which for so many years has been associated with the Hudson's Bay company and its immensely valuable fur trade, but until comparatively recent times the possibility of the country becoming one of the greatest agricultural and mineral producing regions on the American continent, or perhaps in the world, has evoked but little attention. However, now that settlement is extending into the Peace River district and there is a prospect of a railway being built as far as the Peace at least in the near future, a keen and widespread interest regarding the natural resources of the country will undoubtedly be awakened, followed by an influx of explorers and prospectors. At the present day the country between Hudson Bay and the Rocky Mountains, north of the Saskatchewan river, is practically a terra incognita, and much of its nature and resources have yet to be discovered and unfolded to the world. Nevertheless, thanks to the intelligent observations and enquiries of Hudson's Bay officials and missionaries, and explorations in certain sections by geologists, botanists and surveyors sent out by the Dominion government, considerable information has been collected which shows that the territory is rich in natural resources of great economic value; including agricultural tracts of unknown extent, vast timber reaches, illimitable fisheries, salt, asphalt, iron, coal, copper, silver, gold and other minerals.

It only remains now to ascertain the extent of these resources by systematic explorations, which can be carried on cheaply when the country has been opened up to some convenient point in the north whence ample supplies can be handled cheaply by water.

Vast Salt Deposits

A few days ago a telegraphic despatch from Montreal announced on the authority of a man who had been employed with an oil-boring party near Lake Athabasca that an immense bed of salt of great thickness had been struck there and that the area of the deposit was 300 by 600 miles. The existence of salt in the country through which the Athabasca and Mackenzie rivers flow has long been known to the fur traders, missionaries and Indians. At Salt river, on the Slave river, what is probably the finest salt in the world is found. There is a perfect mountain of salt there. At the foot of that mountain, along the Salt river, there are salt springs, the salt of which crystallizes in winter, and in the spring one can get any quantity of the salt, as fine as any in the world, at these places. A short distance from the springs beds of rock salt exist a few inches below the surface of the ground. At other places, both south and north of Salt river, salt is met with and the deposits supposedly cover vast areas. At any rate they are so extensive that, as the Montreal despatch already referred to stated, with a railway to Hudson Bay the Mackenzie river basin could supply the world with salt for ages to come. His Grace Bishop Clut has stated that he used the northern salt on his table just as nature had crystallized and purified it, and it was equally as good as any salt that had ever been placed before him in Canada or Europe. At all the Hudson Bay company's posts in the Mackenzie River country this salt has been used from the time the posts were established.

On the right bank of the Mackenzie, opposite old Fort Good Hope, where there are natural ramparts of limestone, traces of fire are visible, and here are to be found haematite, or oxide of iron; sulphate of iron and sulphate of magnesia; alum, which exudes from the fissures in the stone, and red ochre. At the second rampart of the river, called the Narrows, the limestone banks exude alum and saltpetre. There are also sulphur springs in various places, those on the Clearwater river being the best known. The Clearwater empties into the Athabasca, and the odor from the sulphur is so powerful that when travelers pass they sometimes have to hold their noses to prevent themselves from being choked. East of Lake Athabasca plumbago is found, and on the Peace river there are large deposits of gypsum.

Coal From Belly River to Arctic

There is not the slightest doubt, according to the assertion of a scientific gentleman connected with the Dominion geological department, that the coal of the Belly and Bow rivers and the Saskatchewan, extends away down to the Arctic sea. There is coal at Little Slave lake, and at Pembina river there are seams fourteen feet in thickness. The Pembina is a tributary of the Athabasca. Throughout the Peace River valley and on the lower Mackenzie, and even on the Arctic coast west of the Mackenzie, coal is frequently met with, and in places has been burning for years.

Describing one of the localities where a subterranean fire has been in progress ever since Mackenzie discovered the great river, and for how long before no one knows, Rev. Father E. Petitot, a clever geologist, says: "Six miles above Fort Norman, and for an extent of from eight to ten miles, the Mackenzie is bounded on its right bank by a precipice which reaches at first 150 feet in height and gradually diminishes in height to thirty feet. It is a vast tertiary deposit composed of alternate stratifications of variable shist, lignite, pipe-clay and vegetable mould. The schists are in a state of combustion winter and summer, but the subterranean fire, stinking of bitumen, is intermittent and breaks out sometimes at one point and sometimes at

another. It is not always visible on the surface.

Clay Transformed to Brick

The soil is very hot, damp and movable in the neighborhood of these smoke-holes. Walking is obstructed by heaps of volcanic earth and puzzolana. The pipeclay has been roasted by the subterranean fire and transformed into brick. It contains, or rather it is nothing but an immense mass of leaves of trees, the parenchyma of which has been destroyed, but the fibres and all the lineaments of which appear upon the thin bed of clay which covers them in such a way as to resemble impressions. I have been able to distinguish perfectly leaves belonging to the genera acer, vibrunum, taxum, and pinus. It may also be said that impressions of caryopses of maples in thick tufts are found in this pipeclay. The lignites are not fit for forging work. Sometimes even the trunks of the trees which form the bed of it have not been transformed into clay; however, all this debris has evidently undergone the action of fire. They contain numerous petrifications. Several pieces of smooth grain, which I took at first for palms, now seem to me to be to be maple. Many others which I have found and handled are white spruce. I observed an immense petrified spruce stump at the mouth of Great Bear Lake river. These petrifications present places converted into quartz, or rather encrusted with quartz, whilst others are encrusted with iron slime. Indeed, certain parts are still intact and show the wood just as it was. The geologist cannot fail to find an interesting field there. Porcelain clay, red ochre and asphalt hardened by water are also to be remarked there in great quantities.

The Esquimaux have informed Father Petitot that on the Arctic seashore to the eastward there are tertiary deposits in combustion similar to those at Fort Norman. There are also others on the west side of Bathurst cape. These fires are probably volcanic and not of the same origin as those found along the Mackenzie.

Asphaltum Deposits

Throughout the Athabasca-Mackenzie region there are enormous deposits of natural pitch or asphalt. It occurs on the Athabasca river near Fort McMurray, on Athabasca river, and in various places along the Mackenzie, and also on rivers and lakes east of the last-named stream. On the Athabasca river this pitch pours out of the river bank for a distance of fifty miles. The springs boil up in the summer, and large quantities of the material are found along the shore. It is black and very adhesive. It is described as having a resemblance to English pitch, but has no smell of tar. It has been used at Fort McMurray to cover the roofs of houses, and when applied in this way is said to look like an asphalt pavement. The Hudson's Bay company use it for pitching their boats and similar purposes. It has been estimated that these northern bituminous springs are to be found in all parts of a territory over

a hundred thousand square miles in extent, between the primary rocks of the Laurentian system and the foot of the Rocky Mountains, and even some distance up their slope. But this has yet to be determined by actual explorations.

Referring to the deposits of the Athabasca, Dr. R. Bell has reported "that the deposit is of chertaceous age, but rests directly upon limestone of the Devonian system. The bedding of the latter undulates gently, while the asphalt sand lies in thick horizontal layers upon its surface, and in some cases fills fissures in the upper part of the limestone. The asphaltic matter has no doubt resulted from petroleum rising up out of the underlying Devonian rocks, in which evidence of its existence can be detected. In descending the Athabasca river it was first observed a few miles above the junction of the Clearwater branch, below which it becomes more conspicuous, forming the whole banks of the stream, with the exception of a few feet of limestone at the base, for a distance of many miles.

Tar Flows in Streams

These banks are sometimes about one hundred and fifty feet in height, and frequently maintain an elevation of about one hundred feet for considerable distances. Except where they have been long exposed to the weather, they generally look as black as coal. A thick tar is often seen draining out of the deposit, and in numerous places on the ground at the foot of either bank, or on terraces lower than their summits, this tar collects in pools or flows in sluggish streams to lower levels among the peaty materials in the woods. The surface of these accumulations of tar is usually covered with a hardened pitchy crust. The boatmen on the river break through this crust in order to collect the underlying tar, which they boil down and use for pitching their craft. Some parts of the banks are rendered plastic en masse from being over-saturated with the asphalt, and in warm weather they slide gradually down into the bed of the river, incorporating the boulders and pebbles in their course.

As regards the utilization of these substances, the most appropriate application of the former and that for which it would appear to be admirably adapted, would be for asphaltum purposes. It has one of the most important qualifications of a good bituminous concrete, viz., intimate combination of the mineral and organic constituents, and this in a degree which no artificial preparation of the kind could be expected to possess. It will in all probability be found that a very slight treatment will render it suitable for employment in the construction of roads, footpaths, courtyards, etc., for asphaltum the flooring of granaries, basements of warehouses, and the like, and further as a roofing material. Should it be deemed more expedient to separate the bitumen, this may be effected by simply boiling or macerating the material with hot water, when the bituminous matter entering into fusion will rise as a scum

to the surface and may be removed by skimmers, whilst the sand falls to the bottom of the vessel.

An experiment was made by Dr. Bell in order to ascertain the greatest state of purity to which the bitumen could be brought by this method; it was found that of the 87.73 per cent sand, 69.26 per cent had been removed, the extracted bitumen containing 60.1 per cent sand, and—owing to the extreme fineness of a portion of this latter, as already mentioned—it may be questioned if the purification by this method could be pushed beyond this.

The sand separated by this process, when carefully conducted, is free or almost free from bitumen, and might, after being heated to redness in a reverberatory furnace—to destroy any little adhering bitumen—be advantageously employed for the manufacture of one of the better qualities of glass. The above treatment requires but the simplest of appliances, and might be readily carried out on the spot.

Gold, Silver, Copper and Iron

It will be news to no one who has read or in any way learned anything concerning the Peace and Liard that gold is to be found in the sand bars of those streams, but it will be fresh interest to many to learn that on the headwaters of the Peace, Liard and Peel rivers there are from 150,000 to 200,000 square miles which may be considered auriferous, while Canada possesses west of the Rocky Mountains a metalliferous area, principally of gold-yielding rocks, thirteen hundred miles in length, with an average breadth of four to five thousand miles, giving an area far greater than that of the similar mining districts of the United States. In addition to these auriferous deposits, gold has been found on the west shores of Hudson Bay, and has been said to exist in certain portions of the barren grounds. There is silver on the Upper Liard and Peace Rivers, and copper upon the Coppermine river and in other parts of the country. It is said that large blocks of pure copper are to be found on the banks of the Coppermine river in great quantities. The Indians and Esquimaux carve crosses and ornaments from this copper. Iron is also found on the northeast side of Lake Athabasca and north of Great Slave lake in considerable quantities, and also in various other localities; in fact traces of it can be found almost everywhere.

Variety of Food Fishes

In the immense lacustrine area of the eastern and northern portions of the hinterland there are immense quantities of food fishes of various species, and it is said that from there will come the future supply of a great part of the North American continent. Salmon are found in four of the rivers emptying into Hudson Bay on its western shore, and in all the rivers flowing into the Arctic ocean, except the Mackenzie, where an entirely different but also valuable species, the Salmo Mackenziei, having the local name of the inconnu, exists in great numbers. The capeling is found on the coast of

the Arctic ocean and Hudson Bay, thus implying the presence of cod upon banks near by, and the rock cod has been frequently taken. The Greenland, or harp seal, and the grey square flipper seal are common to the eastern coasts, while the present favorite whaling grounds of the New England whalers are Hudson Bay, Fox Channel and Boothia Bay. These animals are all found with the walrus and porpoise off the mouths and in the estuary of the Mackenzie, as well. Following is a list of the different kinds of fish found in the lakes and rivers of the Athabasca-Mackenzie basin: Perch, upper waters of the Churchill; Bear lake bullhead, Bear lake and other large lakes; six-horned bullhead, small rivers near the Coppermine river; grey sucker, common in nearly all rivers; red sucker, very abundant and extending far to the north; the picconou, found with the two preceding species; pike or jackfish, pickerel, carp and goldeyes in all fresh waters to the Arctic sea; salmon, Churchill river and west coast of Hudson Bay; Ross' Arctic salmon, Regent's inlet and Boothia Felix; Coppermine river salmon, abundant at mouth of Coppermine river; long-finned char, small rivers northeast of Back's river; the amaloak, rivers near Prince Regent's inlet; Hood's char, Coppermine and other rivers; brook trout, abundant in all streams and lakes; lake trout, abundant in all large lakes and many rivers; inconnu, abundant in Mackenzie river; capelin, very abundant at the mouth of Back's great fish river, on sandy shoals in Bathurst inlet; Back's greyling, Arctic and mountains frequent; lesser greyling, waters around Bear lake and Coppermine river; whitefish, immensely abundant in all lakes and many rivers; lesser whitefish, with the preceding, but not so common; the round fish, in the Polar sea, and all rivers north of latitude 62; herring, abundant in nearly all lakes; bear lake herring, abundant at Bear lake; codfish, Arctic coast; the dorse, Arctic coast; methy, or ling, common in the northern lakes and rivers; stellular flounder, Arctic sea east of Mackenzie river; Arctic turbot, Arctic sea at Bathurst inlet; moon eye, abundant in the Athabasca. There are doubtless many other species of fish in the multitude of lakes and rivers throughout this immense district, but the foregoing are all the principal ones that have been noted by observers.

Of the fresh water food fishes of the region, Back's "greyling," an excellent species not prevalent elsewhere, seems to be found everywhere in its rivers, and even west of the Rocky Mountains, but the staple product of its lakes and large rivers seems to be whitefish of great weight and excellent flavor, and trout often reaching forty pounds in weight, and evidence goes to show that the further north the greater the yield of fish till the quantity becomes enormous. Sir John Richardson states that one of the early overland Franklin expeditions took fifty thousand whitefish on a northeastern arm of Great Bear lake, and Sir John Richardson also states that the great lake trout swarm in all the northern great lakes. In regard to the salmon fisheries, it would appear from the evidence available that salmon are abundant in the rivers and along the coast of the northwest side of Hudson Bay as well as in the rivers of the northern shores of the continent.

Great Petroleum Areas

There are very extensive petroleum areas south of Lake Athabasca and west of Great Slave lake. These are now being exploited, but what success has been achieved has not as yet been given to the public, but persons acquainted with the regions referred to express the strongest convictions that oil will be discovered in quantities sufficient to compete with the great regions of the world.

The senate committee of 1883 appointed to inquire into the resources of the Mackenzie River basin, recommended that an area of 40,000 square miles be reserved from sale until the value of the petroleum deposits might be ascertained by exploration and practical tests. The evidence adduced before that committee pointed to the existence in the Athabasca and Mackenzie valleys of the most extensive petroleum field yet discovered. The committee proposed that the reserve should be bounded as follows: Easterly by a line drawn due north from the foot of the Cascade rapids of the Clearwater river to the south shore of Athabasca lake; northerly by the said lake shore and the Quatre Fourche and Peace rivers; westerly by Peace river and a straight line from Peace river landing to the westerly extremity of Lesser Slave lake; southerly by said lake and the river discharging it to Athabasca river and the Clearwater river as far up as the place of beginning.

The foregoing particulars of the natural resources of the great north country will be sufficient to indicate what enormous mines of riches await the enterprise of man to make them commercially available, not only to the northern and western portion of this continent, but the markets of Europe. The distances from accessible points on the Pacific ocean by way of the Peace river and to ports on the Hudson Bay are not great, being from 250 to 400 miles either way, and if the proposed railway from Skeena river to Hudson Bay by way of the Peace River valley is built, as well as the projected line from Edmonton to Peace river, much will have been done towards opening up the country for human industry and revealing to the world the illimitable riches of a territory that occupies an area greater than the Australian continent, or nearly two-thirds of Europe, covering part of the British Isles, Norway, Sweden, Denmark, Germany, Austria and part of France and Russia.—E. A. B. in Winnipeg Free Press.

Empire Day—Message From Lord Meath



ON May 24, Empire Day will be celebrated throughout the Empire, a feature of the movement being the ceremonies in schools by which a knowledge and love of the Empire will, it is hoped, be instilled into the children, says the London Times. The president of the Empire movement, Lord Meath, has written a message "to the British boys and girls of the Empire," which is to be hung up in class rooms. Heading the message are the watchwords of the movement—"Responsibility, Duty, Sympathy, Self-Sacrifice." The message is in these terms:—

"Boys and Girls of the British Empire, May you realize more and more fully, as you grow older your great indebtedness to the British Empire—a majestic community of free nations, freely governing themselves, owing its being to vast sacrifice, enterprise, and valor on the part of your fathers and predecessors, bound together by one King, one Flag, and one Navy, comprising more than a fifth part of the earth's surface—a federation the like of which the world has never known before.

May you bear in mind that of the allied peoples of the Empire, each one looks to the others for practical sympathy, protection, and co-operation, and that not only the state to which you belong, but also the Empire itself, looks to you to be ready in time of need to think, to labor, and to bear hardships in its behalf. May you excel in the practice of faith, courage, duty, self-discipline, fair-dealing, even justice, good citizenship, loyalty, patriotism, and sympathy, and thus by your own individual action, aid in elevating the British character, strengthening the British Empire, and consolidating the British race. "MEATH."

Accompanying the message is a poster which gives the watchwords of the movement (already quoted), its object, in Lord Meath's words in May, 1905:—"It is intended that the Empire celebration shall be the outward sign of an inner awakening of the peoples who constitute the British Empire to the serious duties which lie at their door"; its motto—"One King, One Flag, One Fleet, One Empire"; and its rallying cry—"For God, Duty, and Empire." British citizens are then enjoined to (1) love and fear God; (2) honor the King; (3) obey the laws; (4) prepare to advance the highest interests of the Empire in peace and

war; (7) learn citizenship; (8) follow duty; (9) consider duties before rights; (10) acquire knowledge; (11) think broadly; (12) practice discipline; (13) subdue self; (14) work for others; (15) consider the poor and the suffering; and advised to see that every British child learns the "Empire Catechism," the National Anthem, the "Flag of Britain," and the Empire songs by heart, as part of the history and geography lessons; to agitate until every school possesses a full-sized flagstaff and "Union Jack," a large wall map of the Empire, a portrait of the king, observes "Empire Day" annually, and until systematic instruction in good citizenship is given within its walls, and until every child be so trained, morally, mentally, and physically, as to enable him or her to give in after life the best service to the community and to the State of which he or she may be capable. They are also advised to see that in schools the "Union Jack" is ceremoniously hoisted and saluted by both boys and girls, the "Empire Catechism" recited, and the National Anthem and "Empire Songs" sung on the King's Birthday, on "Empire Day," and on such other notable dates as may be considered desirable. Should it be found to be locally undesirable to celebrate "Empire Day" in schools on May 24, the occasion should be observed on the last school day before May 24; and citizens are asked to fly the "Union Jack" and wear daisies, ox-eyed daisies, bachelor's buttons, or marguerites annually on "Empire Day," May 24.

Lord Meath's "Empire Movement Appeal," in the preparation of which the Rev. Dr. Patton, of Nottingham, was associated, is based on the watchwords of the movement, and the "Empire Catechism" embodies the objects of the movement in the form of question and answer. Both are issued as leaflets, and these and other publications of the movement may be obtained from the secretary, Empire Movement, 83, Lancaster Gate, London, W.

Lord Meath has received the following letter from the Raja of Jawhar:—"Jawhar, January 29, 1908. My lord,—I am much obliged for your letter of the 2nd instant, on the subject of the 'Empire Day' movement. My friend Mr. P. C. Tarapore has also addressed me a letter dwelling on the importance of the movement for the princes and people of India. I agree with my friend in holding that it is the

patriotic duty of every native chief in India to co-operate in a general celebration throughout the Empire of a day so solemnly connected with the memory of Victoria the Good. After giving my best consideration to your lordship's proposal, I have ordered that in future May 24 shall be observed as a public holiday in my State; and that the children of the schools in my territory shall receive a short lesson on the significance of 'Empire Day.' I sincerely trust the movement will receive the active co-operation of all the native chiefs of India; in token of their loyalty to the King-Emperor and to the Empire over which his Majesty so nobly presides.—Believe me, yours faithfully, KRISHNAGHAH, RAJA."

The Hamidieh-Hedjaz railway revives the sacred memories of the Holy Land and also of the prophet Mahomet. Its real starting place is at Haifa, the Mediterranean port under the lee of convent-crowned Mount Carmel, where Elijah gathered to him all Israel and the prophets of Baal and confuted their false gods by himself bringing down fire from Heaven. Here, too, is the brook Kishon where he slew the priests of Baal. The railway route is through the plain of Esdraelon, past Nazareth and across Galilee and along the sweet and tranquil waters of Lake Tiberias with the Mount of Beatitudes in the background; through the canyon of the River Hieromax and up into the cultivated plains of the Hauran the scenes are still scriptural, except that the uniformed boatmen of the excursion companies and the steam launches on the Sea of Galilee have a modernizing effect which is not entirely atoned for by the fishermen fishing from their boats as in the time of the Saviour.

I took this journey starting on a black winter's morning and finding place in the third class passenger coach among the Bedouins, Arab pilgrims, Turkish officials and army engineers, Syrian traders, French train crew, dragomen, and mail sacks. The promise of tourist travel had not then become sufficiently alluring to secure better accommodation. But though the car was uncomfortably crowded by the mix-up of the Aarbs and Bedouins with their guns and belts, their turbans, their striped blankets of black and white and their tunics, they made room for the stranger with all the formal courtesy of their traditions.