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The Natural Resources of Canada

CANADA'S great store of natural resources is not something locked away in a vault for misers to gloat about. It is a treasury of material things to be turned into useful commodities by our skill and energy.

He is, however, a wise man who takes stock every once in a while to see how his inventory stands, and to learn whether he is making the best use of what he has.

Every civilization rests on a different basis of resources. Adam, when forced to till the ground, was using the resource of agricultural soil; we, when we produce atomic energy from uranium, are tapping not only a deeper layer of the earth, but of intellect.

We Canadians had, for generations, the reputation of being suppliers of raw materials: but in little more than a generation we have witnessed a great change. Today, Canada is not only a rich storehouse of materials but an industrial nation fabricating natural resources into usable goods.

In 1955 our net value of primary production was \$4,315 million. After processing these resources in our factories, we exported goods to the amount of \$4,282 million, after supplying our own needs of domestic products.

Luxuriant forests

Canada has a fair share of the world's 5,000 million acres of forests. It has been estimated that about 44 per cent of the land area of Canada is covered by forest growth. We have, according to *Canada Year Book*, 582,000 square miles of commercially productive forest. This forest land bears 150 species of trees, of which 31 are conifers.

According to a statistical record published by the Dominion Bureau of Statistics, the lumber industry had 7,333 establishments in 1955, employed 58,586 persons, and its gross production was valued at \$644

million; the pulp and paper industry employed 62,205 workers, and turned out \$1,327 million worth of goods.

As to industries developing out of forest products, exports of wood, wood products and paper represent the largest single category in the published export statistics and amounted to \$1,521 million during the year 1955, or 36 per cent of our total exports of Canadian produce. The pulp and paper industry leads all other manufacturers in gross value of production, and is one of the world's great industrial enterprises.

Abundant minerals

Having reached her western limits in wheat and having embarked on fullest use of her timber, Canada is now rolling back her northern frontier in search of minerals. Increased knowledge of the geology of the northwest and northeast, and changes in transportation and communication, have brought under scrutiny vast areas which were hitherto looked upon as waste rock.

Today, Canada is the chief world producer of nickel, the platinum metals, and asbestos. It ranks second in the production of gold, zinc, cadmium and selenium; third in silver, molybdenum and barite, and fourth in copper and lead.

The leading metallic minerals produced in Canada last year were nickel, copper, iron, gold, uranium, zinc and lead, valued at \$1,048 million; the leading non-metallics were coal, asbestos, petroleum and natural gas, valued at \$677 million; and in addition there were clay products and other structural material valued at \$275 million. The total mineral production was valued at \$2,134 million.

Iron provides the foundation of modern industry, and Canada is blessed with great resources of ore. Discoveries in the Lake Superior region a few years ago were developed from 1945 onward. Deposits astride the Quebec-Labrador border have been rolling into production since 1954. It seems likely that

Canada's production of iron ore will continue to show a general upward trend, perhaps doubling or tripling within the next decade.

Canada has tapped important deposits of uranium ore, major source of atomic energy. Early in 1953 we had one producing area at Great Bear Lake in the Northwest Territories; now we have four such areas. The three additional are: the Beaverlodge area of northern Saskatchewan, the Blind River area of northern Ontario, and the Bancroft area of south-eastern Ontario. There are additional potential uranium areas: in the Northwest Territories and in British Columbia. Our production in 1957 was 13 million pounds valued at \$131 million. Output this year is expected to come from 24 uranium concentration plants which will handle over 44,000 tons of ore daily.

Although the material which is its principal component is not a natural resource of Canada, but is imported from other countries, aluminum must be mentioned in this list. Its manufacture in Canada is due to our great wealth of another natural resource, water power.

Asbestos, Coal and Oil

Canada is rich in non-metallic minerals. It is the world's chief source of asbestos, production of which is concentrated in the Eastern Townships of Quebec. The value of annual production increased from \$24,700 in 1880 to \$24½ million in 1946 and \$106½ million in 1957.

Coal is one of our problems. This country is one of the world's richest in bituminous reserves, but they are largely located in places far removed from industrial centres. Because of this, Canada has never supplied more than about 50 per cent of the nation's market requirements. In 1957 we produced 13 million tons and imported 20 million tons.

Canada used to suffer from oil anaemia, producing only about a seventh of her needs from her own wells. Total production in 1947 was 7,632,204 barrels. Then came ten years of extraordinary discovery and development, and in 1957 the production was 182 million barrels, valued at \$445 million. Our production of natural gas leaped from 52,656 million cubic feet in 1947 to 206,214 million cubic feet in 1957.

We have, in addition to the flowing oil wells, enormous oil deposits in the tar sands of Alberta, but the difficulty is to find an economic method of extracting the oil. According to *Canada Year Book* this is "the greatest known oil reserve on the face of the earth." Estimates vary between that of Canadian geologists at 100,000 million tons and that of the United States Bureau of Mines at 250,000 million tons.

Agriculture's importance

Agriculture is, of course, Canada's leading primary industry, providing raw materials for many manufacturers. At the time of the last census, 20 per cent of Canada's people lived on farms.

There are different phases of the industry; the Maritimes with their emphasis on products other than grains, Ontario and Quebec with their mixed farming, the Prairies with their overwhelming stake in wheat, and British Columbia with its fruits.

The area of arable lands can be estimated only approximately, because every decade sees an extension of the land found suitable for cultivation. The total occupied agricultural land, improved and unimproved, is given by *Canada Year Book* as 272,000 square miles, or 174 million acres. Crops range from tobacco, grapes and peaches, which are grown in the southern parts of Quebec and Ontario, to the quickly-maturing wheat which ripens in districts where the summer is very short.

The area given to grain in 1955 totalled 45¼ million acres, of which 21½ million acres were given over to wheat. The wheat crop in the five years ending in 1955 yielded 2,673 million bushels, an average per year of 534½ million bushels. The yield per acre ranged from 12.7 to 26.8, averaging 21.7 bushels per acre over the five years.

Livestock and livestock products form by far the largest source of income to Canadian farmers. They yielded \$854 million in 1955.

Fruit deserves special mention, because so many people in other lands think of Canada as part of the "frozen north." The truth is that fruit is grown on a commercial scale in many provinces. It is the principal agricultural crop in such well-known sections as the Annapolis Valley of Nova Scotia, the Niagara Peninsula of Ontario, and the Okanagan Valley of British Columbia.

In 1957, the leading fruit crops yielded 15 million bushels of apples, 68 million pounds of grapes, 15 million quarts of strawberries, 12 million quarts of raspberries, nearly 3 million bushels of peaches, and a million bushels of pears. In addition there were plums, cherries, apricots and loganberries.

Technological progress has marched hand-in-hand with territorial expansion. The number of tractors on farms increased from 47,000 in 1921, to 160,000 in 1941, and 400,000 in 1951. There were, in 1951, 526,000 automobiles and trucks on Canada's farms.

The past 80 years have seen Canada change from a land of sickles and scythes to one of threshing ma-

chines and combines; from ox-cart and buck-board to truck and tractor. Zimmermann, in his book *World Resources and Industries*, contrasts the seven million farmers in North America with the tens of millions in Europe and perhaps hundreds of millions in Asia, and he adds: "A better example of the effect of machine energy and of the capitalistic method of production on the extent of land utilization and the determination of cultivability can hardly be imagined."

The dynamic factors in the agricultural picture of the future will likely be technological improvements, growth of the domestic market, and conservation. Scientific farming, with proper care of soil and careful choice of crops, plays a leading part in increasing and maintaining output.

Agriculture represents immense long term capital investment. Recent estimates put the value of Canadian farm lands and buildings, implements and machinery and livestock at nearly \$10,000 million.

Great fishing; rich furs

Fishing was probably the first industry carried on by Europeans in the New World. Long ago those stalwart adventurers caught their fish off Newfoundland and the Maritimes, cured or dried them, and sailed back to sell them in Europe.

Today, two of the four great sea-fishing areas of the world border on the east and west coasts of Canada. We have rich harvests from the Atlantic, the Pacific and many freshwater lakes and rivers.

There are still largely unknown, but very great, possibilities of increasing the economic value of fisheries in all our waters. The situation of fishermen would be easier if Canadians would eat more fish. The sea catch in 1957 amounted to more than 100 pounds for every person in Canada. Our domestic consumption in that year was only 14 pounds per person on the average.

Inland waters, rivers and lakes contribute about one-seventh of the total fish catch. Canada has 283,000 square miles of fresh water lakes within her borders and these abound in fish of the finest quality. A drastic decline in the lakes fisheries has resulted in joint conservation action by Canada and the United States, directed against the predacious sea lamprey.

In five years the average annual value of products of the fisheries was: sea fisheries \$139 million; inland fisheries \$19 million. There are about 600 firms engaged in the fish processing industry.

Raw furs are the chief commercial product from a big region in the northern part of Canada, but not quite so many people are engaged in trapping as is

claimed in a book published a few years ago. The author says: "Tens of thousands of American Indians still roam the lonely, pathless forests of north-west Canada, trapping the fur-bearing animals." It seems too bad to spoil a romantic exaggeration in an otherwise informative book, but the truth is that the total Indian population of Canada is only 155,874, of whom only 3,838 live in the Northwest Territories, and of these 2,793 are non-trap-laying women and children.

However, Canada is one of the two great fur-producing countries of the world. We have a wide variety of fur, including bear, wolf, fox, weasel, otter, beaver, marten, fisher, mink, rabbit and muskrat. The value of pelts produced in the four seasons 1953-1956 was \$101¼ million.

Fur farming, supplemented by the development of marshlands and establishment of muskrat and beaver preserves has provided work for hundreds of Canadians. In the 1955-1956 fur year, ranch-raised pelts amounted to 56 per cent of the total value.

Twenty million horsepower

We have left to the last of our material resources one which is most important in the processing and development of all others: hydro-electric power.

Water flow has been an important natural resource in Canada from the time the first settlers set up their water-mills to grind grain. The quantity of power available brought this country's economy from one based largely on vegetable growth and raw resources to one more than 70 per cent industrial. Canadians are now the second largest per capita consumers of electricity in the world.

Since 1901, when hydro-electric installation was less than a quarter million horsepower, Canada's total climbed to a million in 1911, three million in 1921, six and a half million in 1931, and to nearly 20 million in 1957. This latest figure represents less than 28 per cent of our recorded water power resources.

Total ultimate consumers in 1956 numbered 4,426,479. Of these, 3,833,913 were domestic and farm; 491,044 commercial; and 96,982 industrial and other bulk users. Of the revenue, \$597 million, \$235½ million came from domestic and farm sales and \$11¼ million from sales for street lighting.

Looking to the future

These are days when we have so much trouble on our minds that rumblings of more troubles ahead make little difference. To the casual individual, the Canadian nickel resources of the year 2058 do not matter very much, nor may he be particularly interested in what forest trees are left standing in the year 2000.

The thoughtful citizen, however, is aware of his responsibilities for the continuity of group life, and particularly for the chance he gives future Canadians to live satisfactorily. Destructive practices today can milk the best of our resources, to the possible enrichment of this generation, but at the expense of impoverishing our children's children who will see the turn of the century.

It has been pointed out in carefully documented reports that world population has increased until there are only about two acres of productive land for each individual, and while destructive practices are daily causing these two acres to shrink, population is mounting at the rate of about 100,000 people per day.

The world's population in 1930 was 2,013 million; today it is approaching 3,000 million; by 1980 it will, at its present rate of growth, have reached 4,000 million. And even now, said the former head of the World Health Organization in March, two-thirds of the world's people are suffering from malnutrition.

Conservation of soil and other resources does not mean, as opponents or muddled people affirm, a restriction of use, but a wise exploitation with a minimum of waste, a maximum utility for all purposes, and a maximum replacement of such resources as are replaceable.

Professional conservation

It is evident that if conservation is to be carried out efficiently there must be expert guidance. This is provided by trained men and women in many different areas of resources — agriculture, fisheries, wild life, minerals, and so forth.

As one example of this interesting field, consider the work of the conservation officer in Ontario, formerly called a game warden. His duties include: enforcing the various acts and regulations established for the protection of the fish and wild life resources; carrying out inventory of wild life and fish; checking on the harvest of game and fur bearers; undertaking management projects.

This information is taken from a monograph entitled "Conservation Officer" (Ontario), published by the Guidance Centre, Ontario College of Education, University of Toronto, and is reprinted here by permission. The author, H. G. McKinley, is with the Division of Operation and Personnel, Ontario Department of Lands and Forests.

Mr. McKinley points out that great changes have occurred in the work required of a conservation officer, due to increasing population, improvements in transportation facilities, the opening up of wilderness

areas, better hunting and fishing gear and techniques, more leisure time available to the individual, and changes through usage in forests, soil and water. The staff has doubled in twenty years, and there are now 200 men located in strategic areas of Ontario.

The conservation officer is primarily an outdoor man, on a year-round basis. He makes his patrols in all kinds of weather, being away from his base for days at a time in the rugged bush country. He must have a keen interest in the principles of conservation and management, as well as knowledge of the game and fish laws and of forest and plant life.

In this work, as well as in the related conservation fields of forest ranging, biology, hatchery management and superintendence of parks, the enthusiastic support of the public is required. The conservation officer in whatever field is not trying to drive people to conserve our resources, but to show them the way. His is an educational effort, one that needs to be supported by school teachers and parents, by fish and game associations, and by every person who hunts, traps or travels in Canada's forests or fishes in her streams.

Human resources

This article has been about the boundless material natural resources of Canada, but far more important than all these are the human resources of the country.

Canada is the home of nearly 17 million people, including men, women and children who became Canadians out of 46 other national groups. Whether born here or elsewhere, all Canadians are heirs to the freedom of this democratic country, in which they are building a standard of living second to none in the world.

They find that in this as in other activities of life where there is freedom to develop there is also responsibility to preserve.

Canada has risen to her present position of influence and prestige through the enterprise and character of her people and their energy in using intelligently the resources she has provided. By exercising foresight and using our heads and applying our capacity for work we can assure that this country shall have ample and diversified resources and industries for generations to come.

There are always impractical people interested in Promised Lands where everything will be easy and free. Canada, whose resources we have reviewed, comes as close as reasonable men want to a Promised Land, but she does not promise things free. All she says is that she will provide the raw materials in abundance if we will do the work needed to turn them into usable goods.