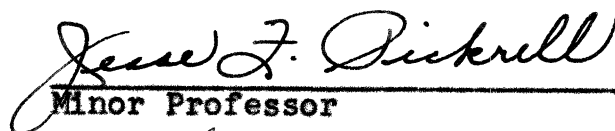



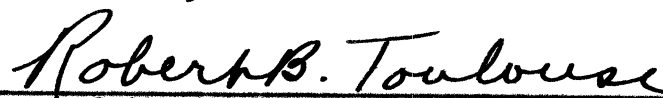
THE GROWTH OF THE CANADIAN
OIL INDUSTRY

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THE GROWTH OF THE CANADIAN
OIL INDUSTRY

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CHAPTER I

INTRODUCTION

Statement of the Problem

Gasoline, wax, kerosene, various fuel oils, lubricants, etc. are all products of the petroleum industry.¹ The most important uses of oil are as fuels² and as lubricants³, oil being the greatest source of the latter. Perhaps the most colorful--if not the most correct--definition of petroleum is: "Petroleum is an outstanding source of fuel, lubricants and international friction."⁴

The oil industry in general had its modern beginnings around the early 1900's; the Canadian oil industry had its modern beginnings during the latter part of the 1940's. The Canadian oil industry is only an extension of the oil industry in general.

The most important of the primary industries of Canada is agriculture; second is the primary mining industries (extractive operations only), of which the extraction of oil

¹Erich W. Zimmermann, World Resources and Industries, Revised Edition (New York, 1951), p. 498.

²Ibid., p. 496.

³Ibid., p. 500.

⁴Ibid., p. 548, citing Joseph S. Davis in his foreword to Herbert Feis, Petroleum and American Foreign Policy.

is a part. In other words, petroleum belongs to the non-metallic minerals and products industry.⁵

The problem to be dealt with in this thesis is the growth of the Canadian oil industry.

For a more detailed statement of what the content of this thesis will attempt to present, it only seems appropriate to quote directly and somewhat extensively from the introduction made by the Oil and Gas Journal to its special report on Canadian oil and gas in its August 19, 1957, issue:

Canada is the land of the future . . . of oil and gas, unlimited. No other part of the North American Continent offers as much hope for new major oil and gas reserves as the western Canada sedimentary basin. In 10 short years, the western provinces of Alberta, Saskatchewan, Manitoba, and British Columbia have come to the fore as vital forces in the world's oil traffic. From a position of deficiency, the dominion has reached a position of self-sufficiency in this one decade--a feat most unusual in the annals of oil.

The discovery of reef oil at Leduc in 1947 was the explosive beginning of a new era in Canadian history; it is comparable to the changes wrought at Spindletop in 1901. For in these 10 years, the western plains have undergone a transformation. Prosperity from oil and gas has reached into every phase of Canadian life. A predominantly agricultural economy has been catapulted into a new industrial world of oil and gas exploration, production, refining, pipelining, and petrochemicals. New towns have sprung from the very earth, old towns have been completely changed, and in the cities, gleaming new office buildings, refineries, and industrial plants reflect the new prosperity.

⁵Canada, Department of Trade and Commerce, Private and Public Investment in Canada, 1926-1951 (Ottawa, 1951), pp. 31-32.

But Canada is only on the verge. The next decade will make the past one seem tame. Before the northern oil finders lies a vast expanse of untested prospective oil country--700,000 sq. miles of it. The projected demand for oil and gas over the next score of years will stimulate a drilling assault that will be unparalleled in American oil history. In the next 10 years alone, Canadians expect to drill 40,000 wells in an effort to locate 7½ billion barrels of new reserves to add to their present 4 billion. Gas, once a drug on the market, has suddenly become a new cash crop as hungry pipelines thrust their way across the dominion from east to west and west to east.⁶

Purpose of the Investigation

The purpose of the investigation is to present--chronologically, whenever possible--the growth of the Canadian oil industry from the days of earliest discovery to the present, with an eye on both historical growth and potential development.

Importance and Scope of Problem

The Canadian oil industry is important both nationally, that is, to Canada, and internationally: nationally because Canada is constantly conscious of the self-sufficiency problem of maintaining the domestic demand for domestically produced petroleum and petroleum products, while at the same time maintaining production to supply the current and projected domestic demand; internationally because Canada, in addition to being one of the world's principal producers

⁶"Canada: Oil and Gas Unlimited," Oil and Gas Journal, LV (August 19, 1957), 121.

of petroleum and petroleum products, is looking forward to the day when--after the problem of self-sufficiency ceases to be a threat--she may become one of the world's principal exporters of petroleum and petroleum products, becoming, perhaps, a rival of the United States.

The scope of the problem covers the Canadian oil industry from its beginnings during the mid-1800's up to the present time; discoveries, pipelines, major oil-producing fields, refineries, industry problems and American influence are a few of the more important phases of the Canadian oil industry that are presented.

Method of Study and Sources Used

The problem was handled by first consulting material found in books, magazine articles, encyclopedia articles, economic almanacs and public documents, most of which was derived from the North Texas State College library; however, a small portion of the material used was obtained from the National Oil Scouts and Landmen's Association, which is located in Austin, Texas. The material used in the presentation of this study was then selected from these sources. The material chosen was then assembled, chronologically, for use in the presentation of this thesis.

Chapter Content

Chapter II is a study of the Canadian oil industry up to 1938, sketching early development and stressing the

development of the fields of Calgary, Fort Norman and Turner Valley. Chapter III deals with development from 1939 to 1946, discussing the development of the Lloydminster field and discussing the war-time activity of the Canadian oil industry, with special reference to the Canol Project, a joint Canadian-American project. Chapter IV is a study of recent development from 1947 to the present; the Leduc field, refineries and pipelines, industry problems, American companies in Canada, and the Athabaska tar sands are some of the major topics included in Chapter IV. Chapter V is a concluding chapter, high-lighting--in summary-form--the more important findings of the entire study.

CHAPTER II

EARLY DEVELOPMENT

Commercial attempts at producing oil were under way in southwestern Ontario when the oil fields of western Pennsylvania were on the verge of discovery in the mid-nineteenth century.¹ In 1858, in the southwest part of Ontario, at Oil Springs, Lambton County, the first oil well on the American continent was dug. That part of Ontario is still important, production-wise.²

Canada first began commercial oil-shale retorting in 1815 in New Brunswick; the United States, between 1850 and 1860, built, on the eastern seaboard, more than fifty plants to distill oil from Canadian shale. This, of course, was before the discovery of oil in the United States in Pennsylvania, and this distillation project was abandoned with the Pennsylvania discovery.³

¹Leonard M. Fanning, "Petroleum," Encyclopaedia Britannica, Vol. XVII (Chicago, 1957).

²C. M. Knowles and L. C. A. Knowles, Comparative Views of Dominion Problems Canada, Vol. II of The Economic Development of the British Overseas Empire, 3 vols. (London, 1930), p. 543.

³E. S. Woytinsky and W. S. Woytinsky, World Population and Production (New York, 1953), p. 893.

From 1858, the main centers of oil production moved westward from Ontario;⁴ from the more populous areas of eastern Canada to the less populous areas of western Canada.⁵

In early Canadian petroleum history, oil men spent much and waited long before getting returns, if any, on their investments; the prospects were always good, but the returns were usually frugal.⁶

From 1914 to 1938, the main body of Canadian petroleum history is the story of the three fields of Calgary, Fort Norman and Turner Valley.

Calgary

Present Canadian oil industry history dates from 1914; in that year the Dingham well, located on the north bank of Sheep Creek in Turner Valley, was completed successfully. Previous history centers around the Athabaska tar sands in 1788, the Langebin natural gas field in 1885 (forty miles northwest of Medicine Hat), and the Lineham well at Pincher Creek in 1902.⁷

⁴Knowles, op. cit., II, 543.

⁵Zimmermann, World Resources, p. 518.

⁶Leonard M. Fanning, Foreign Oil and the Free World (New York, 1954), p. 175.

⁷Campbell M. Hunter, "The Oil Fields of Western Canada," Journal of the Institute of Petroleum, XXIX (March, 1943), 75.

Calgary is located in west central Canada,⁸ some forty miles south of Calgary.⁹ Only small amounts of oil were found there.¹⁰

Except for Calgary, there was a steady decline in the production of oil after about 1907. By 1916 it seemed that the industry would have to be abandoned unless revitalized by new discoveries. Prospecting and development continued, however, as all indications of crude oil existing in commercial amounts seemingly justified systematic oil programs. The situation was eventually saved by success in Alberta.¹¹ The success was at Fort Norman, sometimes referred to as Norman Wells, near the Arctic Circle in west central Canada, in 1920.¹²

Fort Norman

The first important Fort Norman discovery went to a depth of 800 feet. The oil company report read:

Well is very encouraging, and while somewhat over-rated by the press, warrants the hope that prospecting of the area will result in sufficient production being obtained in a few years to warrant the development of some transportation scheme whereby the production can be utilized.¹³

⁸Fanning, "Petroleum." ⁹Hunter, *op. cit.*, p. 75.

¹⁰Fanning, "Petroleum." ¹¹Knowles, *op. cit.*, II, 543-4.

¹²Fanning, "Petroleum."

¹³Thomas M. Fraser, "Canada's Big Oil Strike," *Scientific American*, CXXIV (May 14, 1921), 385.

The Canadian government was not unaware of the Fort Norman field, but acted only after news of the first strike created the possibility of a rush to the district. On January 24, 1921, all previous oil and natural-gas regulations relating to the Northwest Territories were cancelled. On February 12, 1921, new regulations went into effect, reserving for the government three quarters of all discoveries as crown reserves. The regulations were to the effect that a person could obtain a permit covering prospecting of not more than 2,560 acres. Two forms of title were provided: first, to prospect for oil and gas over the designated area for four years; second, in case of discovery, a lease covering one-quarter of the area at fifty cents an acre for the first year, and one dollar for the next two years.¹⁴

The Fort Norman wells, which were brought in in 1921, were little used. They were eventually capped until 1930, when radium was discovered on the shores of Great Bear Lake; this brought many aerial prospectors.¹⁵

From 1857 to 1924, Canada ranked eleventh among the oil-producing countries of the world, producing 25,561,000 barrels of forty-two gallons each (crude petroleum).¹⁶

¹⁴Francis Drake, "Immense New Oil Fields Discovered in Subarctic Region of Canada," Popular Mechanics, XXXVI (July, 1921), 49.

¹⁵James Montagnes, "Oil for the Alaska Highway," Science, XCVI (October 2, 1942), supplement, 12.

¹⁶Isaac Lippincott, Economic Resources and Industries of the World (New York, 1932), p. 157.

Until 1925, the maximum production of crude oil in Canada in any one year amounted to little over 900,000 barrels.¹⁷

Turner Valley

In 1924, a field was brought in at Turner Valley, located in west central Canada.¹⁸

The first drilling took place in the foothills country around Turner Valley in 1913-1914; the deeper and more productive zones were not reached until 1924. The field was limited, however, and the interest in oil stocks was slight as compared to mining. Interest in oil stocks never equalled the interest in mining until the post-World War II discoveries.¹⁹

The original drilling in 1913-1914 in Turner Valley was interrupted by World War I (1914-1918). This is now considered fortunate, because in those days drilling technique was not sufficiently advanced to have resulted in very successful development.²⁰

Turner Valley began to focus public attention in 1924. In that year, the Royalite Company brought in its historic Number 4 well, at a depth of 3740 feet and with a flow of

¹⁷Ernest Raymond Lilley, The Oil Industry (New York, 1925), p. 237.

¹⁸Fanning, "Petroleum."

¹⁹Grant MacEwan, Between the Red and the Rockies (Toronto, 1952), p. 231.

²⁰Hunter, op. cit., p. 75.

500 barrels of naphtha a day. This well yielded over 900,000 barrels of naphtha, valued at over \$3,000,000: a very good return. Despite many good wells completed, activity slowed down between 1928 and 1936. In June of 1936, the Turner Valley Royalties Company brought in the first crude-oil well at a depth of 6825 feet. Practically all the production in Turner Valley prior to 1936 had been "vapourphase oil"--that is, naphtha derived from "wet gas." Since 1936, the field has enjoyed continued success, due primarily to the conservation measures taken to protect it.²¹

Turner Valley is one of the most remarkable oil fields in the Western world. Between 1924 and 1936 it produced 8,902,734 barrels of naphtha; by 1943 it had produced 38,815,079 barrels of high-grade crude oil from only 190 wells, the average depth of which exceeded 7500 feet, and most of which flow under their own gas pressure.²²

Most of the Turner Valley oil is refined by the refineries in or near Calgary; principal refiners are the Imperial Oil company, the British American Oil Company, and the McColl-Frontenac Oil Company. These three have a joint capacity of over 20,000 barrels a day, a conservative estimate; a less conservative estimate holds that these three refiners could capacitate over 40,000 barrels a day.²³

²¹Ibid., pp. 75-82.

²²Ibid.

²³Ibid.

Wells in Turner have been very costly, between 40,000 and 50,000 pounds. Despite this, the industry flourishes. This is probably due to the fact that the cost of production of the oil is very small; all the wells flow. A long life is expected from the field: conservation measures protect it and the decline in production is very gradual.²⁴

The Turner Valley oil, being of high quality, realizes a good price, but owing to the distances from the important eastern Canadian markets, the field is at a disadvantage.²⁵ This has been somewhat overcome recently by the construction of pipelines to the Great Lakes.

From first to last, Turner Valley has enjoyed great success with the exception of 1925. In that year the yield was less than 200,000 barrels. During this time development became almost impossible because of the limited extent of sediments in which oil could be found.²⁶

General Development, 1925-1938

Although Canada was the world's third largest importer of oil in 1925, natural movement was greatly impaired by a tariff placed upon certain petroleum products. Not subject to duty were oil to be used by mining companies, high grade gasoline and crude petroleum. All other petroleum products were subjected to duties of from one-half to

²⁴Ibid.

²⁵Ibid.

²⁶Lilley, op. cit., p. 237.

two and one-half cents per gallon or 20 per cent ad valorem. Therefore, the importation of kerosene and lubricating oils-- which paid the highest duties--was rather insignificant, but imports of crude oil to be refined in Canada were large. Fuel oil paid a duty of one-half a cent and was imported in considerable amounts in spite of the duty. The five refineries of the Imperial Oil Company refined the bulk of the other products and more than half of the gasoline used; these refineries were supplied mainly by imports from the United States, but also refined oil from Peru and from wells located in Canada. Consumption, high per capita in all lines, was particularly high in grades of gasoline. Imports from other sections of the British Empire were given a preference rate, and as the production within the British Empire was small, comparatively, the amount of oil and petroleum products paying the reduced duty was small.²⁷

In 1927, Canada produced 479,503 barrels of crude oil; of this, Alberta produced 321,154 barrels, Ontario produced 140,105, and New Brunswick produced 18,244 barrels.²⁸

In 1930, Alberta again produced more oil than the rest of Canada.²⁹ In 1930, it was also recognized that the

²⁷Ibid., p. 458.

²⁸Knowles, op. cit., II, 544, citing Canada Year Book, 1927-8, p. 386.

²⁹Ibid.

competition of the enormous output of the United States was bound to be a difficult factor for some time, but all indications were that western Canada was capable of becoming one of the greatest oil producing regions of the world.³⁰

In 1936, the production of petroleum in the Turner Valley field and other Alberta fields amounted to 1,312,368 barrels; by 1940, production for this area had increased to 8,362,203 barrels.³¹

The 1930 Canadian crude oil output was 1,522,220 barrels valued at \$5,033,820; output in 1931 was 1,544,600 barrels valued at \$4,566,000. The 1931 production was the highest ever up to that date; this could have been more but was kept down by conservation policies.³² In the first half of 1932, Canadian production dipped to a reduction of close to fifty per cent of comparable data for 1931.³³ However, this percentage was lowered when data were in for the entire year, estimates placing total Canadian output at around 1,077,795

³⁰Ibid., pp. 543-544.

³¹Canada, Department of Trade and Commerce, Canada, 1942 (Ottawa, 1942), p. 66.

³²Victor Lauriston, "Canada's Oil Output in 1931 Kept Down by Conservation," Oil and Gas Journal, XXX (January, 28, 1932), 94.

³³Victor Lauriston, "Slowing Down in Operations in All Canadian Fields and Decline in Oil Production," Oil and Gas Journal, XXXI (July 28, 1932), 74.

barrels.³⁴ The 1933 estimated production of 1,126,100 barrels compared with the 1932 revised figures for production of 1,044,412 barrels represented an increase of 7.8 per cent.³⁵ Turner Valley continued to be a major factor in Canadian crude oil production in 1933.³⁶

In 1938, oil production in Canada shot up to 6,870,000 barrels, a 133 per cent increase over the 1937 total of 2,944,000 barrels. Value of the 1938 output was \$11,514,000 as compared with the value of 1937 production of \$5,399,353.³⁷

Predictions for the Canadian oil industry during the 1930's were hopeful. Several new refineries were completed or under construction. The Dominion of Canada was rapidly nearing a goal of self-sufficiency as far as its domestic requirements and demands for petroleum products were concerned. Its importance in world markets was also rapidly increasing.³⁸

³⁴Victor Lauriston, "Canada's Crude Production Declined in 1932 Because of Lack of New Wells in West," Oil and Gas Journal, XXXI (January 26, 1933), 101.

³⁵Victor Lauriston, "Canadian Production Likely to Continue Gain Begun in Later Months of the Past Year," Oil and Gas Journal, XXXII (January 25, 1934), 71.

³⁶Victor Lauriston, "New Wells Drilled in West Canada Could Not Offset the Decline in Crude Oil Production," Oil and Gas Journal, XXXII (July 27, 1933), 84.

³⁷"What Canadian Oil Boom Signifies," Business Week, (February 18, 1939), p. 47.

³⁸C. O. Willson, "Expansion in Canadian Refining Operations Will Supply Domestic and Foreign Requirements," Oil and Gas Journal, XXXI (November 3, 1932), 8.

CHAPTER III

DEVELOPMENT FROM 1939-1946

Development in the Canadian oil industry from 1939 to 1946 is mainly concerned with the activity at the Lloydminster field which began in 1939 and with the war-time activity of the industry--especially the controversial Canol Project--which lasted from 1939 to 1946.

The significance of the Canadian oil industry in 1939 was due to the fact that production in the last few years had been altered from a picture of negligibility to one of increasing output; discoveries during and immediately prior to 1939 indicated that the rate of gain would be, if anything, quickened.¹

The Canadian oil industry in 1939 was important both economically and politically. All British Empire fields produced little more than two per cent of the world's total oil production. Britain imported or bought ninety-five per cent of her own needs. In the event of a war, it would be an advantage to Britain to have a supply within her empire.² Canada satisfied this need.

¹"What Canadian Oil Boom Signifies," p. 47.

²Ibid.

Lloydminster

Lloydminster, like Calgary, Fort Norman and Turner Valley, is located in the west central part of Canada; however, these four fields are widely separated.³

The field at Lloydminster was first discovered in 1934, but over ten years of exploration elapsed before a really good well was brought in, in 1944. In that year, twelve wells at Lloydminster produced 6,300 barrels of oil. In 1945, twenty more wells were drilled which caused production to rise to 44,800 barrels. In the first ten months of 1947, 617,638 barrels of oil were produced.⁴

Most of the Lloydminster oil is used in the production of asphalt. The next largest share of finished products is composed of diesel, fuel and furnace oils. Only 7 per cent of Lloydminster production goes for the production of gasoline.⁵

War-time Activity

War-time activity in the Canadian oil industry was speeded up, primarily through governmental loans to oilmen to encourage more intensive exploration, drilling and

³Fanning, "Petroleum."

⁴"Canadian Oil Find," Business Week (December 27, 1947), p. 77.

⁵Ibid.

other petroleum activities. War rationing was begun on July 16, 1941.⁶

Table I, below, shows oil fields discovered during the war years, with dates of their discovery.⁷

TABLE I
CANADIAN OIL FIELDS DISCOVERED
DURING THE WAR YEARS OF
1939-1946

| Fields of Discovery | Date of Discovery |
|--------------------------|-------------------|
| Vermilion | 1939 |
| Lloydminster* | 1939 |
| East Taber | 1942 |
| West Taber | 1944 |
| Conrad | 1944 |
| North Princess | 1944 |
| Jumpingpound** | 1944 |
| South Princess | 1946 |

*Renewed activity in 1943 led to intensive development in 1944 and thereafter.

**A gas-distillate field.

These fields contributed greatly--along with the fields of Calgary, Fort Norman and Turner Valley--to the Allied war effort, especially the Lloydminster field.

Soon after the outbreak of war, a new refinery was built at Fort Norman producing diesel engine oil and aviation gasoline.⁸ Although Fort Norman was an important war-time

⁶"Use of Gasoline and Oil Throughout Canada Restricted," Foreign Commerce Weekly, IV (August 9, 1941), 34.

⁷MacEwan, op. cit., p. 283.

⁸Montagnes, op. cit.

supplier, especially to the United States,⁹ one of the greatest petroleum controversies of the war arose there.

The controversy developed around the Canol Project, a joint American-Canadian undertaking at Fort Norman. The United States Army had charge of the project which called for the development of the Fort Norman pool and pipelining of the oil to Whitehorse, Yukon, for refining. This was in 1942. The project was to be completed in six months but official opening was not announced until the spring of 1944.¹⁰ Imperial Oil, Ltd. was to produce the oil at Fort Norman, the United States Army was to construct the 595-mile, four-inch, above-ground pipeline to Whitehorse, Yukon, and the Standard Oil Company of California was to construct and operate the refinery in Whitehorse.¹¹

Because of the delay in completion, the project was brought under fire by the Truman Committee. This committee brought to light that the project was undertaken too hastily and with no expert advice except from officials of Imperial Oil, who themselves doubted the feasibility of the plan. The Imperial officials thought the oil could be

⁹"Oil Boom Grows," Business Week (July 3, 1943), p. 57.

¹⁰"Retreat from Canol," Business Week (March 10, 1945), p. 24.

¹¹"Canol Pipeline Opened," Business Week (May 6, 1944), p. 30.

flown out much cheaper and much more economically than if a pipeline was built.¹²

After coming under congressional fire, the Army rushed work on the project. The Army attitude indicated that the project would be completed despite criticism from Congress and the Petroleum Administration for War. The Truman Report left the decision on the completion of the Canol Project to the Army's judgment.¹³

The Army-Washington battle lasted two years, after which, in 1945, the Canol Project was abandoned. The project was located inconveniently near the Arctic Circle, and, as critics put it, good money was only being sent after bad. Although the Canol Project was inaugurated to help the defense of Alaska by providing emergency gasoline and to contribute to the expulsion of the Japanese in the Aleutian Islands, it did neither, although an outlay of over one hundred million dollars was represented by the project.¹⁴

Canada, in 1939, produced 7,837,503 barrels of oil, but topped this record with an estimated total of 8,722,215

¹²Henry D. Ralph, "War Department Defends Canol Project Despite Criticism of High Officials," Oil and Gas Journal, XLII (November 25, 1943), 20.

¹³Henry D. Ralph, "Truman Report Leaves Decision on Completing Canol to Army's Judgment," Oil and Gas Journal, XLII (January 13, 1944), 28.

¹⁴"Retreat from Canol," p. 24.

barrels in 1940.¹⁵ The record is one of growth after 1940. In 1941, production jumped to 10,101,149 barrels, and according to estimates, reached a new high of 10,359,267 barrels of crude petroleum (including natural gasoline) in 1942.¹⁶ Although Canada produced over 10,000,000 barrels in both 1941 and 1942, she produced less than one fifth of the world's yearly production and only 15 per cent of her own domestic requirements.¹⁷

Turner Valley production dropped in 1944, but this drop was partially offset by other fields in Alberta and by Fort Norman wells in the Northwest Territories. Although the Canol Project at Fort Norman was a failure in regards to its intended purpose, the wells at Fort Norman were helped in their development by the construction of the pipeline from Fort Norman to Whitehorse, Yukon.¹⁸

From 1914 to 1944, Alberta produced over 75,000,000 barrels of oil, valued at about \$120,000,000.¹⁹

There was a steady decline in Canadian production from 1942 to 1945, although in 1945 the decrease was not

¹⁵Victor Lauriston, "Annual Review: Turner Valley Extensions Give Canada Record Production," Oil and Gas Journal, XXXIX (January 30, 1941), 158.

¹⁶Victor Lauriston, "Canadian Production at Peak," Oil and Gas Journal, XLI (January 28, 1943), 169.

¹⁷Canada, Department of Trade and Commerce, Canada, 1946 (Ottawa, 1946), unnumbered pages between p. 92 and p. 93.

¹⁸Ibid., p. 93.

¹⁹Ibid., unnumbered pages between p. 92 and p. 93.

as great as the decrease of the preceding year.²⁰ Fort Norman production dropped rapidly in 1945 because of the closing of the Whitehorse refinery and of the pipeline from Fort Norman to Whitehorse due to the cessation of the war.²¹

As of 1946, Canada produced oil from wells in Alberta (most of the oil came from Alberta), the Northwest Territories, Ontario and New Brunswick. Until 1946 Canada's oil production was closely bound up with the story of Turner Valley in southern Alberta.²²

Canadian crude oil production declined slightly in 1943 to 10,048,199 barrels.²³ Petroleum production varied for a number of years prior to 1947 between 7,000,000 barrels and 10,000,000 barrels. The principal field was Turner Valley in Alberta, which produced nearly 90 per cent of Canada's oil in 1947.²⁴

²⁰Ibid.

²¹Ibid., p. 93.

²²Ibid., unnumbered pages between p. 92 and p. 93.

²³Victor Lauriston, "Canadian Fields: Drilling Activity Shifts to Outlying Areas," Oil and Gas Journal, XLII (January 27, 1944), 197.

²⁴Charles Clay, Stephen Butler Leacock and Griffith Taylor, "Canada (Mineral Production)," Encyclopaedia Britannica, Vol. IV (Chicago, 1957).

CHAPTER IV

RECENT DEVELOPMENT, 1947-PRESENT

Since 1947, the history of Canadian petroleum development has been spectacular; that year gave rise to the current Canadian oil boom. For example, of the 129 oil wells drilled between January 1, 1947, and September 30, 1947, only fifteen of them were dry holes.¹ Canadian output expanded elevenfold between 1946 and 1953.² Table II, below, shows Canadian crude oil production between 1947 and 1953.³

TABLE II
CANADIAN CRUDE OIL PRODUCTION,
1947-1953

| Year | Barrels Per Day |
|----------------|-----------------|
| 1947 | 20,000 |
| 1948 | 32,500 |
| 1949 | 57,600 |
| 1950 | 78,400 |
| 1951 | 130,500 |
| 1952 | 167,200 |
| 1953 | 221,600 |

¹"Canadian Oil Find," p. 77.

²"Canadian Output Up 1,100 Per Cent Since 1946," Oil and Gas Journal, LII (December 21, 1953), 220.

³Fanning, Foreign Oil, p. 325.

As the above table indicates, Canadian oil growth has been steadily climbing since 1947, with no set-backs in production. In 1948, Canada possessed 1 per cent of the world's estimated reserves of petroleum.⁴ All this progress has been made possible by new discoveries, the outstanding of which was at Leduc in 1947.

Leduc

The first tangible evidence of Canada's great petroleum possibilities was given when a discovery well was drilled at Leduc,⁵ about twenty miles southwest of Edmonton,⁶ Alberta, in 1947, by the Imperial Oil Company, an affiliate of the Standard Oil Company (New Jersey).⁷ This discovery began the western Canada boom,⁸ where, by the end of 1947, there were thirty wells, all producing excellent oil.⁹

The conditions in the Leduc field resemble those of the West Texas basin area. This whole sedimentary area

⁴The National Industrial Conference Board, The Economic Almanac 1953-1954, edited by Frederick W. Jones (New York, 1954), 38, citing the Bureau of Mines which "calculated percentages on basis of previously published data. Before calculating the percentages, the Bureau modified the estimates according to later data."

⁵Fanning, "Petroleum."

⁶Clay, Leacock and Taylor, op. cit.

⁷Fanning, "Petroleum."

⁸Fanning, Foreign Oil, p. 176.

⁹Clay, Leacock and Taylor, op. cit.

stretches across the Prairie Provinces to the Arctic Ocean, covering about 475,000 square miles. It is all prospective oil territory.¹⁰

The Leduc extensions of Woodbend, Armena, Pincher Creek and Redwater were brought in in 1948.¹¹ Leduc and its Redwater extension are both shallow (6,000 feet deep) but the potential area is vast.¹² Other fields discovered soon after these include Excelsior, Stettler, Campbell, and Joseph Lake.¹³ In 1950, the fields of Heart's Hill, in Saskatchewan, and Acheson-Stony Plains, eight miles west of Edmonton, were discovered. And in 1951, after over thirty years of unsuccessful exploration, a major field was discovered in British Columbia along the Alaska highway.¹⁴

Alberta produced approximately 20,000 barrels of oil per day in 1947;¹⁵ in 1949, Alberta produced 55,000 barrels a day with many of the wells stopped.¹⁶

¹⁰Woytinsky and Woytinsky, op. cit., p. 887.

¹¹MacEwan, op. cit., p. 231.

¹²Woytinsky and Woytinsky, op. cit., p. 887.

¹³Mark Olson, "1950, Canada's Big Development Year," World Oil, CXXXI (December, 1950), 221.

¹⁴Woytinsky and Woytinsky, op. cit., p. 887.

¹⁵MacEwan, op. cit., p. 283.

¹⁶"Prosperity for the Prairies," Economist, CLVII (July 9, 1949), 81.

Most estimates consider the reserves of Alberta to be around 500 million barrels;¹⁷ however, in 1949, the Imperial Oil Company estimated that Alberta contained crude oil reserves of 600,000,000 barrels. Less conservative estimates put the reserves at one billion barrels.¹⁸

Canada became the most active oil-producing region in the world in 1948, next to the United States and Venezuela (exclusive of U. S. S. R. for which no data were available).¹⁹ (See Appendix A, Table VI, which shows a comparison of countries in regards to oil reserves.)

Refineries and Pipelines

Within a few years after Leduc, several additional fields had been found by United States and Canadian companies. Intense exploration work was done in Alberta, British Columbia, Saskatchewan and Manitoba. In addition to the above mentioned fields, the fields of Big Valley, Flint, Wizard Lake and Golden Spike were brought in. All these fields are widely scattered in a vast area which is remote from the populated centers of Canada and the United States. Pipelines were built to connect these discoveries with

¹⁷MacEwan, op. cit., p. 283.

¹⁸"Prosperity for the Prairies," p. 81.

¹⁹"Canada," World Oil, CXXIX (July 15, 1949), 66.

existing Canadian refineries in the east; new refineries were built in the Prairie Provinces and on Canada's western coast and in northwest United States.²⁰ Continued rises in production merited a vast program of pipeline and refinery construction. In 1952, the Interprovincial pipeline was completed from Edmonton to Superior, Wisconsin. The first two sections--the twenty-inch pipeline from Edmonton to Regina and the sixteen-inch pipeline from Regina to Gretna--were completed in 1950; by the spring of 1951 they were in full operation, with a daily capacity of 95,000 barrels. This pipeline is over 1,150 miles long.²¹ Although most of the oil ultimately arrives at the Imperial Oil Company's big refinery at Sarnia, Ontario,²² it must be shipped from Superior to Sarnia across the Great Lakes by lake tankers.²³ The only problem is that during the winter months when the Great Lakes are frozen over, the flow of oil by lake tanker is interrupted.²⁴ However, the terminus of the line in Superior can hold, or rather store, 1.8 million barrels, as much as the entire line holds.²⁵

²⁰Woytinsky and Woytinsky, op. cit., p. 912.

²¹Clay, Leacock and Taylor, op. cit.

²²Fanning, "Petroleum."

²³Clay, Leacock and Taylor, op. cit.

²⁴Fanning, "Petroleum."

²⁵Woytinsky and Woytinsky, op. cit., p. 902.

The need for the expansion of the Interprovincial pipeline was made evident soon after its completion. Pumping stations were added and some one hundred miles of the central section were looped.²⁶ In 1953, it was announced that the Interprovincial pipeline would be extended from Superior to Sarnia at a cost of \$75,000,000.²⁷

Other pipelines were built to transport petroleum from growing Canadian refineries to eastern Canadian markets.²⁸

The second most important pipeline in Canada is the Trans-Mountain pipeline, which extends westward from Edmonton to the border and on to Puget Sound.²⁹

Of course, refinery runs greatly increased between 1939 and 1952. Table III shows this increase.³⁰

TABLE III

ESTIMATED CANADIAN REFINERY RUNS, 1939-1952,
(IN THOUSANDS OF BARRELS)

| Canada: | 1939 | 1946 | 1947 | 1948 | 1949 | 1950 | 1951 | 1952 |
|--------------------|------|------|------|------|------|------|------|------|
| Total | 123 | 195 | 214 | 239 | 265 | 299 | 349 | 379 |
| American Companies | ... | 138 | 150 | 172 | 191 | 210 | 236 | 241 |

²⁶Ibid., p. 912. ²⁷Fanning, "Petroleum."

²⁸Woytinsky and Woytinsky, op. cit., p. 912.

²⁹E. H. LaBorde, "Canadian Oil Development and Its Importance to America," The Commercial and Financial Chronicle, CLXXXIII (May 10, 1956), 2241.

³⁰Fanning, Foreign Oil, p. 201.

The 1946 figure of 195,000 barrels as compared with the 1952 figure of 379,000 barrels (refinery runs) clearly shows the growth of refining.

In 1953, there were thirty-nine refineries in Canada, most of which were located in the western provinces. As of that date, total Canadian crude capacity amounted to 475,000 barrels daily, Canada ranking second to the United States as to the number of refineries. The United States had 352 refineries.³¹ All evidence indicates that these companies do most of the refining in Canada: the Imperial Oil Company, the British American Oil Company, the McColl-Frontenac Oil Company and Excelsior and Husky Oil and Refining, Limited.³² Canada still imports much crude oil for refining. (See Appendix A, Table VII, which shows Canadian imports of petroleum for refining.)

Industry Problems

Climate and geography in Canada present transportation problems to the Canadian oil industry, principally in the form of rugged terrain and freezing winter weather. Pipeline construction is halted during the most severe winter months, and, as stated before, shipment of crude oil by lake tankers on the Great Lakes also comes to a standstill.

³¹Ibid., p. 209.

³²"Refinery Surge," Oil and Gas Journal, L (May 5, 1952), 161.

Another problem is that of how fast the Prairie Provinces should be developed. Local markets, such as Alberta, Saskatchewan and Manitoba do not consume much oil and are therefore limited.³³

In 1940, the practice of price discrimination--often charged against the oil industry--was said to be in evidence within the Canadian petroleum industry. Although there were several producers within the industry, price policies were set by the Imperial Oil Company. This company discriminated between gasoline and fuel oil buyers, between wholesalers and retailers, between different regions and even between different localities within the same region. British Columbia is a good example: Competition from other areas in Canada was barred because of long freight hauls to the coast; United States competition was somewhat barred by a tariff, but more specifically because of arrangements between the Imperial Oil Company and its United States affiliate. As of 1940, the Union Oil Company had not operated its refinery since 1926 because of an arrangement with Imperial Oil to buy gasoline and fuel oil at considerably low prices.³⁴

³³Walter H. Voskuil, Minerals in World History (New York, 1955), p. 163.

³⁴Lloyd G. Reynolds, The Control of Competition in Canada (Cambridge, 1940), pp. 64-71.

The impact of the petroleum industry on coal, iron and steel industrialism presents another problem. After activity in the oil industry became intense, prairie people began to think of a possible industrial development.³⁵ Oil was a major tool in the industrialization of Canada.

Oil, along with other non-ferrous metals, has acutely bombarded the coal and steel industrial structure in Canada; this was accomplished with the help of transcontinental railroads which opened up vast areas for exploration. A conflict has developed between the provinces, with their emphasis on the new industrialism of oil, minerals and hydro-electric power, and the federation with its political and economic emphasis on the old industrialism of coal and iron, protectionism and rigid debts.³⁶

Harold A. Innis, in his Essays in Canadian Economic History, says:

The results have been evident in the financial and labour problems of the iron and steel, coal mining, and railroad industries, of federal debts, and of inter-provincial and international constitutional stalemates. The disequilibrium which marked the extensive intervention of the federal government in the construction of transcontinental railways to overcome the handicaps involved in the absence of an iron and steel industry enormously stimulated the production of minerals and hydro-electric power and the use of oil. It strengthened the position of provinces with mineral resources in a progressively industrial civilization and weakened the

³⁵MacEwan, op. cit., p. 231.

³⁶Harold A. Innis, Essays in Canadian Economic History (Toronto, 1956), pp. 317-318.

position of provinces in which wheat production has been stimulated. The dead hand of an old industrial system is particularly menacing to new industrialism. In . . . Canada . . . as in . . . the United States, labour and capital have organized defences against new competitors.³⁷

Although oil has reinforced the coal and iron industrialism at some points in Canada, it has subjected it to obsolescence at others, especially in encroaching upon the position of coal in transportation in the densely populated regions.³⁸

Many of the Canadian petroleum industry problems present themselves to other countries as problems, not just to Canada. For instance, one current problem facing the United States petroleum industry is this: Joined by United States coal interests, small producers and many companies not engaged in foreign operations express fears that middle-east oil imports, combined with South American imports and Canadian pipelining of crude oil into the United States which began in 1953, threaten the domestic industry. Control on imports by a quota system or by the imposition of a tariff are proposals for alleviating these fears.³⁹

Oil men in Canada face a variety of import and exchange regulations. One of the more important of these regulations is the Dominion's Austerity Act of October, 1947. This act was effected for two reasons: (1) to curb the depletion of Canada's short supply of American dollars; and, (2) because

³⁷Ibid.

³⁸Ibid., p. 317.

³⁹Fanning, "Petroleum."

of an unfavorable balance of trade which existed between Canada and the United States. Under this act, imports are limited to those goods not readily obtained or produced in Canada; these even are restricted by tariffs and quotas. Only certain necessary items are tariff- and quota-free.⁴⁰

The Dominion's Tariff Item 848 permits the entry of some equipment without duty or sales tax. Nonconsumable goods and required but unavailable main equipment are the only things--in practice--to which exemptions from duty apply. This tariff item lists as duty free

. . . all machinery and apparatus and parts thereof (including motive power and rope) and drilling mud for use in exploratory, or discovery work in connection with, and development, depletion and production of petroleum or natural gas wells; seamless, lap-welded and electric welded iron or steel casing, tubing and drill pipe for use in connection with natural gas or oil wells.⁴¹

Despite Dominion regulations, more than ninety per cent of equipment and materials needed in the drilling and production of oil and gas are permitted to enter duty-free. Foreign exchange is readily available for payment of goods admitted through customs. Oil operators are little bothered by regulations, as all red-tape and technicalities may be referred by the oil men to their Canadian bankers.⁴²

⁴⁰Neil Williams, "Operators in Canada Face Variety of Import and Exchange Regulations," Oil and Gas Journal, XLVII (December 2, 1948), 44.

⁴¹Ibid.

⁴²"Canadian Exchange Regulations Favorable to Oil Industry," World Oil, CXXIX (December, 1949), 312.

Most oil operators in Canada belong to the Canadian Petroleum Association, the largest oil association in Canada. Ninety-seven per cent of Canadian demand for crude oil and petroleum products is produced or refined by members of this association.⁴³

American Companies in Canada

The Canadian government, since the beginning of the current oil-boom in Canada, has encouraged participation by American companies, primarily because of the need of outside capital to carry development to desired goals. The progress made by the Canadian oil industry in recent years could come only as the result of feverish activity and vast expenditures. The Canadian government enacted laws and formulated regulations which attracted both domestic and foreign investment, thus promising a favorable political and economic climate. Nearly every large American company joined in the rush for oil, leasing great tracts of land, operating jointly (in some cases) and drilling wildcat wells.⁴⁴

Of the five hundred identifiable companies operating in Canada, approximately two-thirds of them are wholly or

⁴³R. W. Diamond, Jr., "These Groups Direct Petroleum Activity in Western Canada," Oil and Gas Journal, LIV (August 15, 1955), 167.

⁴⁴Fanning, Foreign Oil, pp. 183-184.

partly American owned.⁴⁵ Every important American company is engaged in an intensive search for Canadian oil.⁴⁶

Some of the American oil companies that have joined in the Canadian oil "rush" include the Conorada group (Amerada, Continental and Ohio Oil), the J. Paul Getty interests, Phillips Petroleum, Sinclair and Union Oil of California.⁴⁷ Others are Texaco, Gulf Oil, Cities Service, Standard of California and Socony-Vacuum.⁴⁸ Imperial Oil, a Canadian company and one of the largest operating in Canada, is 70 per cent owned by Standard Oil of New Jersey.⁴⁹ American share in Canadian production of crude petroleum was estimated at 29 per cent in 1947.⁵⁰

The Athabaska Tar Sands

It has been estimated that the Athabaska tar sands, located between the Hudson Bay and the Peace River district, may contain reserves that could possibly be several times the total proven oil reserves of the world. Development of these sands is slow, since compared with producing

⁴⁵Ibid., pp. 241-242.

⁴⁶Woytinsky and Woytinsky, op. cit., p. 887.

⁴⁷Fanning, Foreign Oil, p. 241. ⁴⁸Ibid., p. 177.

⁴⁹Ibid., p. 176. See Appendix A, Table VIII, for a detailed table showing American companies, their Canadian affiliates or holdings and the acreage that they control.

⁵⁰Leonard M. Fanning, American Oil Operations Abroad (New York, 1947), p. 76.

petroleum from buried oil, the process is economically prohibitive.⁵¹ The oil is in the form of a film of bitumen around each grain of sand, and although both the Dominion and the provincial governments have tried to separate the oil from the sand, no separation process that is anywhere near economic has been found.⁵² These tar sands are but one of the challenges with which science taunts its adherents.⁵³ These vast deposits of tar sands comprise one of the best potential sources of oil in Canada. The Dominion Bureau of Mines estimates that these sands hold over 100 billion barrels of oil. The United States Bureau of Mines places its estimate at 250 billion barrels. More modest estimates indicate that perhaps 27.5 billion barrels of oil could be recovered from all tar sands in the Western Hemisphere.⁵⁴

From time immemorial, Indians have used the pitch from the Athabaska tar sands to caulk their canoes. The first white men in the area in 1778 found oil even bubbling to the surface, and were amazed to see the sands stretching for miles. In 1941, a limited but yet uneconomical success was evidenced in an attempt to extract lubricating oil and

⁵¹Fanning, Foreign Oil, pp. 182-183.

⁵²"Prosperity for the Prairies," pp. 81-82.

⁵³Ibid.

⁵⁴Woytinsky and Woytinsky, op. cit., pp. 891-892.

gasoline from the sands. The sands do produce asphalt of a high quality, which has been used extensively for paving. The process used by the plant which extracts lubricating oil and gasoline from the sands took eleven years to be developed by American engineers. It is thought that perhaps synthetic rubber may be obtained, along with diesel fuels and coke, from these bituminous sands.⁵⁵

The areal extent of these sands is estimated at over 10,000 square miles, but at the present time, only about twenty square miles are workable. This twenty square-mile area is expected to yield 500,000,000 barrels of oil. The world's need for oil could well be supplied by this one area for twenty or thirty years.⁵⁶

It has been suggested that the Athabaska tar-sands may be regarded as an intermediary ancestor of crude petroleum, and that, had heat and pressure conditions been present, the tar would have been converted into what we now term crude petroleum. In other words, the tar represents a transitional link between the raw material and crude oil.⁵⁷

General Activity

Most of the important Canadian discoveries are due to seismographic exploration; surface geology never accounted

⁵⁵Montagnes, op. cit.

⁵⁶Hunter, op. cit., pp. 82-83.

⁵⁷Ibid.

for the discovery of any large reserves of crude oil in Canada.⁵⁸

In the seven years preceding 1953: (1) oil production soared from 21,000 barrels per day to 250,000 barrels per day; (2) pipeline mileage was increased from 400 miles to 4,000 miles; (3) natural gas reserves increased one and one-half trillion cubic feet per year; (4) twenty-four operating oil companies became 250; (5) oil investments grew from one million dollars a month to one million dollars a day; (6) refining capacity was tripled; and, (7) crude reserves increased 4,000 per cent. And in 1953, oil surpassed gold as Canada's leading mineral in product value. Canada was 7.8 per cent self-sufficient in petroleum in 1947; nearly 50 per cent by the early 1950's.⁵⁹

Because of great reserves, Canada's petroleum activity should be measured in terms of area under exploration, rigs running, wells drilled and geophysical crews in the field. Because of inadequate outlets for its oil, the Dominion's production is no indicator of its ability to produce. Canada operates today at one-half her maximum oil ability; production is supplying 60 per cent of demand, yet demand is increasing 300 per cent.⁶⁰

⁵⁸Fanning, Foreign Oil, p. 181.

⁵⁹Frank J. Gardner, "Canadian Oil Grows Up," Oil and Gas Journal, LIII (July 5, 1954), 88.

⁶⁰LaBorde, op. cit., p. 2241.

The government policy of reserving leased lands which it later sells at auction, permits many to enter fields discovered by others; participations and farmouts are frequent.⁶¹

Since 1947, Western Canadian requirements have amounted to over two billion dollars in investment, by more than 250 companies.⁶²

Canada was in its eighth year of the world's biggest current oil boom in 1954 and was still progressing.⁶³ By that year, Canada's dependence upon foreign oil had been reduced to 50 per cent of requirements; in 1942, dependency had been 92.2 per cent.⁶⁴

After 1949, self-sufficiency was rapidly becoming realizable. Improved transportation and refinery facilities, not to mention improvements in drilling technique, was bringing export of gas and oil closer to actuality. Before 1949, the industry was complete within itself, that is, refining, transportation and distribution were more closely balanced with production.⁶⁵

⁶¹"Canada's Expansion Has Been Spectacular," Oil and Gas Journal, LIII (December 21, 1953), 312.

⁶²Charles M. Short, "Canada and Petroleum," Banking, XLVIII (December, 1955), 45. See Appendix B for a more detailed account of investment in the Canadian mining industry, of which petroleum is a part.

⁶³Fanning, Foreign Oil, p. 176. ⁶⁴Ibid., p. 186.

⁶⁵"Canada Approaches Petroleum Independence," World Oil, CXXIX (December, 1949), 285.

Canada does export some oil, as shown by the table below which shows Canadian exports to the United States.⁶⁶

TABLE IV
EXPORT OF CANADIAN CRUDE OIL TO UNITED STATES
(DAILY AVERAGE, BARRELS)

| Importing States | 1956 | First 4 Months, 1957 |
|---------------------|----------------|----------------------|
| California | 15,050 | 33,380 |
| Washington | 52,970 | 77,860 |
| Montana | 360 | 210 |
| North Dakota | 2,690 | • • • • |
| Minnesota-Wisconsin | 42,080 | 57,930 |
| Michigan | 4,870 | 5,210 |
| Miscellaneous | 90 | 30 |
| Total | 118,110 | 179,620 |

This table indicates that 1957 was another growth year for Canada, not only export-wise, but also production-wise, since Canada's position is to first meet domestic requirements.⁶⁷

⁶⁶George Weber, "Canadian Refining Has Growing Pains," Oil and Gas Journal, LV (August 19, 1957), 137.

⁶⁷See Appendix A, Figure 1, for a map showing crude movements into and from Canada. See also Appendix A, Table IX, which shows crude movements to Canadian refineries.

CHAPTER V

CONCLUSION

The story of Canadian oil has been centered almost entirely around the history of western Canadian (Alberta) fields. All but a small percentage of the proven crude reserves in Canada are found in Alberta.¹ Primarily because of the important post-World War II discoveries, Canada has emerged today as a major potential oil source.² Canada has become one of the world's principal producers of crude petroleum, especially in the Western Hemisphere; its territory promises of new discoveries as the search for oil continues. Canada's output of oil continues to grow by leaps and bounds.³

Canadian development, especially recently, has been reminiscent of the California gold-rush days. Extraordinary activity has resulted in Canada, especially in Western Canada, and more specifically, in Alberta.⁴ For example, Table V, below shows how the fields of Leduc-Woodbend

¹Gilbert M. Wilson, "1951 in Canada," World Oil, CXXXIII (December, 1951), 249.

²Fanning, "Petroleum."

³Woytinsky and Woytinsky, op. cit., p. 899.

⁴Ibid., p. 902.

and Redwater, located in Alberta, have grown since their discovery in 1947 and 1948, respectively.⁵

TABLE V
GROWTH OF LEDUC-WOODBEND
AND REDWATER FIELDS

| | 1948 | 1949 | 1950 |
|---------------------------------|------|------|------|
| Number of Producing Wells: | | | |
| Leduc-Woodbend | 151 | 351 | 519 |
| Redwater | 1 | 278 | 733 |
| Output, in Millions of Barrels: | | | |
| Leduc-Woodbend | 4.7 | 9.7 | 10.6 |
| Redwater | 0.04 | 4.8 | 10.7 |

This output could have been much more but was limited by inadequate transportation and storage facilities. Both of these fields operate on a proration basis, and allowable quotas have been cut many times.⁶

Summary

Efforts were being made to produce commercial oil in Canada long before Drake drilled the well in Pennsylvania which touched off the United States industry. Activity was intensified after both World War I and World War II, but

⁵Ibid., citing World Oil (July 15, 1951), p. 150.

⁶Ibid.

resulted in no major discoveries. In the three decades before 1947, over 125 million dollars were spent in oil activity in Canada. In 1947, the Leduc field was discovered which set off the current Canadian oil boom. Since that date over 600 million dollars have been invested in Canadian oil, with an additional 200 million dollars being invested in pipeline transportation. The end of investments is nowhere in sight.⁷

The Canadian oil industry is now approaching a second period of activity, that is, one of calm organized planning and development. Canada first experienced periods of boom and bust and bonanza, but that initial period of wild enthusiasm is giving way to a more mature approach to problems such as competition and constructive planning. The period of growing pains and speculative storms is over.⁸

Outlook

The outlook is for new capital and a strengthened economy, along with an increase in employment and rich provincial treasuries. Exploration, development and markets loom large in Canada. It is hoped that, through free enterprise and competition, Canada will eventually rival the oil industry of the United States; however, the immediate problem is one of self-sufficiency. Growth continues in

⁷Fanning, Foreign Oil, pp. 22-23.

⁸Gardner, op. cit., p. 88.

refineries, pipelines and markets.⁹ Future growth will depend more and more upon the oil fields in western Canada, especially in Alberta, and upon the tar sands of Athabaska.¹⁰

Canada is second only to the United States in per capita consumption of petroleum and petroleum products. Total Canadian demand for petroleum and by-products is growing far more rapidly than production.¹¹ At the rate Canada's production is climbing, along with demand, will it ever reach a point where it threatens the balance of the Canadian economy?¹² It has been recommended that the lack of petroleum products in eastern Canada be filled by the western surplus, but this is difficult because of the physical conditions of transportation.¹³

Will Canada become self-sustaining, on balance, very soon? This depends upon whether or not Canadian oil will be permitted to enter the mid-western markets of the United States in larger quantities than in the past. In exchange, Canada must take in United States oil and other foreign oil on the east coast, and on the west coast (British Columbia) at less cost than Canadian oil.¹⁴

⁹Ibid., p. 89. ¹⁰Hunter, op. cit., p. 83.

¹¹"Canada Approaches Petroleum Independence," p. 285.

¹²"Canada," World Oil, CXXIX (July 15, 1949), 66.

¹³"Canada Approaches Petroleum Independence," p. 286

¹⁴Ibid., 285.

Canadians would like to see the United States and Canada pooling their oil resources, whereby the eastern portion of Canada would receive most of its oil from the United States and the Middle East; the Pacific Northwest would use western Canadian oil.¹⁵

However, Canadian crude cannot be assured of more than a limited market in the United States due to opposition that would certainly arise from American producers. The inflow of Canadian oil would have effects on proration rates and price structures in the United States.¹⁶

Whether or not Canada will eventually supply the United States with petroleum depends on Canadian policies of oil production and development; also upon the United States import need and the foreign sources from which United States needs are to be obtained.¹⁷

One of the most important roles that the Canadian oil industry is playing today has been stated by Leonard M. Fanning, in his Foreign Oil and the Free World.

The importance of Canada's arrival--if you will--lies not merely in its great oil potentiality. Its strategic location is tremendously vital. A great new, and in all probability enormous, source of oil has been found in the North American continent. Over and

¹⁵"Bringing Prairie Oil to Market," Business Week (October 11, 1952), p. 94.

¹⁶"Canada Approaches Petroleum Independence," p. 285.

¹⁷Voskuil, op. cit., pp. 163-164.

above economic pressures, the conditions of the Free World defence conceivably might speed Canada's development.¹⁸

National defense certainly plays an important role in the Canadian oil policy formulation. A security threat to the United States or to Canada would apply with equal force to the other. Should overseas supplies of oil be placed in jeopardy, the oil resources of Canada and the United States might have to be pooled.¹⁹

¹⁸Fanning, Foreign Oil, p. 188.

¹⁹Voskuil, op. cit., p. 164.

APPENDIX A

TABLE VI

WORLD PETROLEUM RESERVES IN PRINCIPAL AREAS*

| Country | Reserves (In Billions of Barrels) |
|----------------------------------|---|
| Canada | 1.4 |
| Middle East | |
| Saudi Arabia | 10.4 |
| Kuwait | 15.0 |
| Iraq | 8.7 |
| Iran | 13.0 |
| South America | |
| Venezuela | 9.5 |
| Columbia | 0.4 |
| United States | |
| Texas | 13.6 |
| California | 3.7 |
| Louisiana and Oklahoma | 3.6 |
| U. S. S. R. | 5.5 |

*George L. Merton, "The Stake of American Companies in Canadian Oil," The Magazine of Wall Street and Business Analyst, LXXXIX (February 9, 1952), 528.

TABLE VII
CANADIAN IMPORTS OF PETROLEUM CRUDE
FOR REFINING*

| Year | 000 Gallons |
|---------------------|-------------|
| 1871-1921 | - - - - - |
| 1931 | 1,020,762 |
| 1941 | 1,637,465 |
| 1945 | 1,987,943 |
| 1946 | 2,218,963 |
| 1947 | 2,395,283 |
| 1948 | 2,643,758 |
| 1949 | 2,587,709 |
| 1950 | 2,752,700 |
| 1951 | 2,914,911 |
| 1952 | 2,841,968 |
| 1953 | 2,781,707 |
| 1954 | 2,757,017 |
| 1955 | 3,033,732 |

*The Dominion Bureau of Statistics, Canadian Almanac and Directory 1957, 110th edition, edited by Beatrice Logan (Vancouver, 1957), p. 286.

TABLE VIII

HOLDINGS OF CANADIAN OIL LANDS BY AMERICAN COMPANIES*

| Canadian Affiliation or Holdings | American Company | Acreage (Millions) |
|-------------------------------------|--|--------------------|
| Company Controlled Acreage | Amerada Petroleum | 1.5 |
| Bear Oil Co. | Joint Holding of Tidewater, Skelly, Pacific Pet., Sunray, & Pacific West | 5.0 |
| California Standard Co. | S. O. of California 100% | 3.5 |
| Canadian Gulf Oil Corp. | Gulf Oil 100% | 5.0 |
| Canadian Superior Oil of California | Superior Oil of Calif. 51.7% | 4.4 |
| Hudsons Bay Oil & Gas Corp. | Continental Oil Co. 50% particip. | 6.5 |
| Huskey Oil & Refining | Phillips Pet. 50% particip. | 4.7 |
| Imperial Oil Co. Ltd. | S. O. of N. J. 69.75% | 8.0+ |
| McColl Frontenac | Texas Co. 56% | 5.2 |
| Company Controlled Acreage | Ohio Oil | 9.0 |
| Pacific Petroleum Ltd. | Sunray 10% | 5.0 |

TABLE VIII--Continued

| Canadian Affiliation or Holdings | American Company | Acreage (Millions) |
|----------------------------------|---|--------------------|
| Company Controlled Acreage | Honolulu Oil 33% particip., Sunray Oil 33% particip., & Seaboard Oil 25% | 10.5 |
| Shell Oil Co. of Canada | Shell Oil Co. 100% | 8.7 |
| Socony-Vacuum Explor. Co. | Socony 100% (also in combination with Woodley Pet. and Southern Prod. Co.) | 6.6 |
| Sohio Petroleum Co. | S. O. of Ohio (participating: Texas Gulf Prod. Co., Union Sulphur Co., Chicago Corp., Republic Natural Gas Co.) | 11.0 |
| Stanolind Oil & Gas Co. | S. O. of Indiana 100% | 2.3 |
| Sun Oil Co. Ltd. | Sun Oil 100% | 2.2 |
| Company Controlled Acreage | Tide Water Associated Oil Co. (participating: Seaboard Oil, Atlantic Refining, Columbian Carbon, Honolulu Oil, Sunray, Union Oil) | 15.5 |
| Company Controlled Acreage | Union Oil of Calif. | 5.5 |

*Merton, "Stake of American Companies," p. 529.

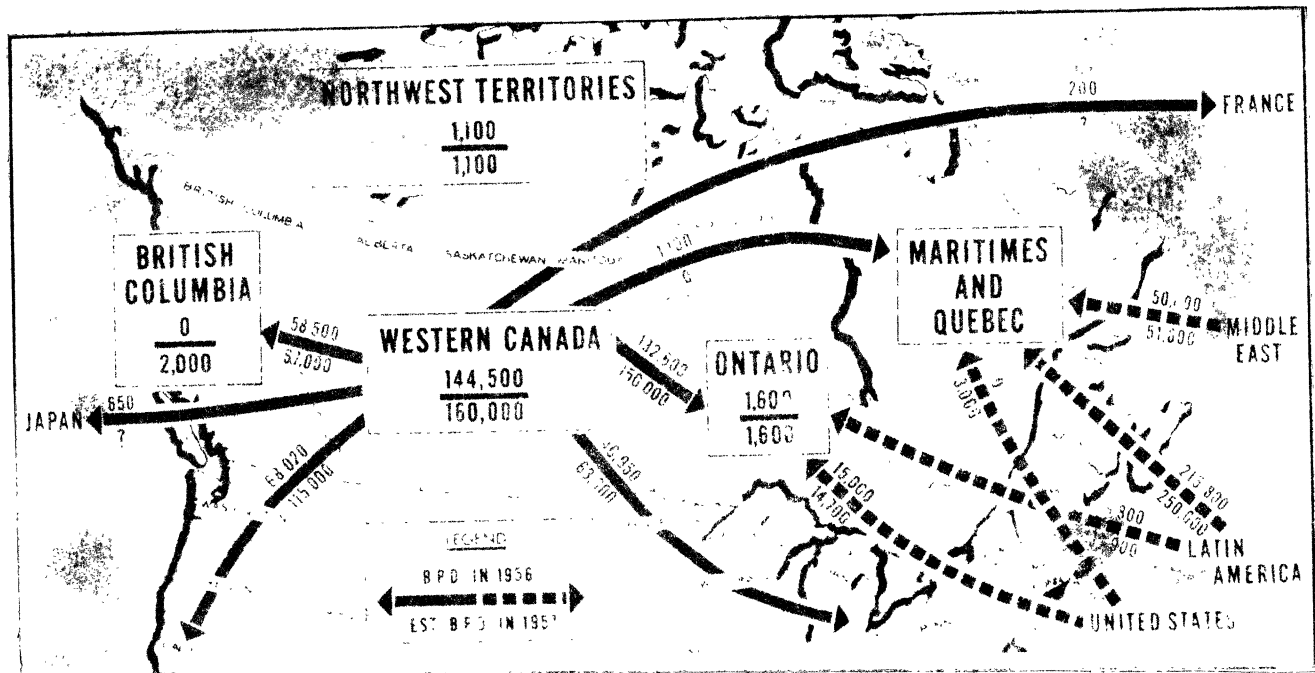


Fig. 1--Crude movements in Canada¹

Imports are shown on the map by broken lines. Exports, along with crude for internal consumption, are shown by solid lines. Figures located above the lines represent barrels per day in 1956. Figures below the lines represent estimated barrels per day for 1957.² The current crude capacity for Canada is 700,000 barrels, but by 1961, this is expected to rise to over one million barrels. The prediction for Canada is increasing demand for petroleum and petroleum products for the next twenty to twenty-five years.³

¹"Canadian Refining Has Growing Pains," p. 137.

²Ibid.

³Ibid., p. 135.

TABLE IX

CRUDE MOVEMENTS TO CANADIAN REFINERIES
(AVERAGE BARRELS PER CALENDAR
DAY, 1956)*

| To - - - - - | Maritimes and Quebec | Ontario | Manitoba | Sas- katche- wan | Alberta, N.W.T. | British Columbia | Total Canada |
|---------------------|----------------------------|---------|----------|------------------------|--------------------|---------------------|-----------------|
| From: | | | | | | | |
| Venezuela | 211,800 | 4,100 | . | . | . | . | 215,900 |
| Trinidad | 3,400 | 5,700 | . | . | . | . | 9,100 |
| Colombia | 600 | . | . | . | . | . | 600 |
| Total Latin America | 215,800 | 9,800 | . | . | . | . | 225,600 |
| Saudi Arabia | 43,500 | . | . | . | . | . | 43,500 |
| Kuwait | 2,200 | . | . | . | . | . | 2,200 |
| Iran-Iraq | 4,300 | . | . | . | . | . | 4,300 |
| Total Middle East | 50,000 | . | . | . | . | . | 50,000 |
| United States | . | 15,000 | . | . | . | . | 15,000 |
| Total Imports | 265,800 | 24,800 | . | . | . | . | 290,600 |
| Ontario | . | 1,600 | . | . | . | . | 1,600 |
| Manitoba | . | 1,100 | 12,800 | . | . | . | 13,900 |
| Saskatchewan | . | 7,900 | . | 15,000 | . | . | 22,900 |
| Alberta and N.W.T. | 1,100 | 123,600 | 14,800 | 37,400 | 65,600 | 58,500 | 301,000 |
| Total Domestic | 1,100 | 134,200 | 27,600 | 52,400 | 65,600 | 58,500 | 339,400 |
| Total All Canada | 266,900 | 159,000 | 27,600 | 52,400 | 65,600 | 58,500 | 630,000 |

*"Canadian Refining Has Growing Pains," p. 138.

APPENDIX B

Following is a direct and somewhat extensive account of investment in Canada in the mining industry, of which petroleum is a part, for the early 1950's.

As of mid-1950 [the mining industry] provided employment for over 70,000 persons [in Canada], or about one and one-half per cent of the number of civilians employed in Canada. The gross value of mineral production in 1950 is estimated at over one billion dollars, or about 23 per cent of the total output of primary industries. The industry contributed about 3.4 per cent of total national income in the same year.

Imports of primary products in this field were quite important, particularly coal and crude oil. In 1950 imports amounted to \$444 million and were responsible for about 33 per cent of the total domestic supply of minerals, oil and quarry products. On the whole, imports of the minerals have been rising in recent years. For example, even though increasing quantities of crude oil are produced in Alberta and shipped to other parts of the country, the Canadian refining industry continues to be based to an important extent on imported petroleum.

Exports of minerals in raw form were less important than imports, the former amounting to \$157 million or 15 per cent of the total value of mineral production.¹

Size and Growth of Industry. In 1950 there were more than 1,100 plants turning out non-metallic minerals, petroleum and coal products. The industry produced a total of close to \$900 million worth of commodities in that year and employed some 45,000 people. It contributed 5 per cent to the net value of all manufacturing production in the same year. About one-half of the firms in the field were incorporated companies doing 98 per cent of the industry's business. Canadian

¹Canada, Department of Trade and Commerce, Private and Public Investment in Canada, 1926-1951, p. 32.

producers met over three-quarters of domestic requirements, the remainder being imported chiefly from the United States. Exports have been running at less than 8 per cent of production. . . .

The industry has grown substantially in the last decade. Some of this growth has been associated with the Alberta oil and natural gas development which has come very much to the fore in the post-war period. In terms of employment and output the industry has grown about as much as the average manufacturing industry, but in terms of expenditures in plant and equipment it has spent a considerably larger amount than most other industries. . . . Further, about 50 new medium-sized and large companies have come into existence since the beginning of 1946 and these have provided jobs for close to 2,000 people.

Investment by Industry. New firms coming into operation, modernization and replacement of existing plant and equipment that had been allowed to run down during the war period, and further expansion and diversification, particularly in the building material supplying industries, have been important factors in the post war period. In more recent years construction of new oil refining capacity has become an increasingly important factor. New investment averaged \$47 million per year. If to this is added the annual average maintenance and repair outlay of about \$26 million, the industry spent a total of \$73 million yearly in the post-war period on the expansion and maintenance of its plant and equipment . . . petroleum and coal products industries were the more important element in investment of this industrial group.

The large post-war investment outlays in the industry, exclusive of the petroleum and coal sector, reflect the heavy demands made by the post-war construction program. In Quebec, Ontario and Alberta annual expenditures of over a million dollars per project were made to expand capacity of cement making plants. Sums of one million dollars were spent in improving brick yards, asbestos production facilities and optical and abrasive plants. Even larger capital outlays have been made in the period to expand the capacity of existing oil refineries and to build new ones. Annual expenditures of up to \$10 million or more have been made on individual establishments in Quebec, Ontario and Alberta.

Trend of Investment. Investment in this industry appears to follow closely the patterns of investment by all manufacturing industries. All five turning points of the two investment series coincide. A large

proportion of non-metallic minerals and petroleum and coal products is sold to other businesses or to governments and individuals for capital projects. Thus the demand for products of the industry is closely tied in with fluctuations of total private and public investment in Canada.

Amplitudes of Investment Fluctuations. Except for the latter part of the thirties, investment by the industry has fluctuated more substantially than investment of manufacturing as a whole. . . .

It is noteworthy that investment in the industry rose substantially in the post-war period, although neither profits in the industry nor prices of the commodities it turned out rose as significantly as the corresponding items in most other groups of manufacturing.²

²Ibid., pp. 67-68.

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