All Canada has a stake in the oil industry

Ten years ago, on February 13, 1947, an oil well was successfully brought in on the outskirts of the small Alberta town of Leduc. It was Imperial Leduc No. 1.

For Imperial Oil, the well was the end of a three-decade-long fruitless search for major oil deposits in the west. For Alberta it was the herald of a crude oil industry which to date has brought the province more than $375 million in direct revenue and launched it on a program of diversified industrialization undertaken a decade ago. For Canada it was the start of a new oil era and a program of industrial investment by private enterprise that is without parallel even in the booming Canadian post-war period.

Since 1947, the Canadian oil industry has invested almost four billion dollars in its search for, and the production of, crude oil, in refineries, pipe lines and other forms of transportation, and in petrochemical and allied plants.

This sum represents $250 for each man, woman and child in Canada. On present budgets, it would be almost enough for the federal government to run the country for a year. It would pay, four times over, the Canadian share of the St. Lawrence Seaway, or finance seven Komatin projects; or buy all the houses built in Canada in the past three years.

What actually has been achieved by this huge investment? It has allowed Canada’s oil men to: raise to 10,300 Canada’s successful oil wells, compared to the 400 producing in 1947; almost triple—with the most modern equipment—the country’s refining capacity; build more than 5,000 miles of new pipe lines and raise Canada’s known oil reserves from 72 million barrels to three billion barrels.

Because much of the activity associated with the oil industry takes place in the west, it is easy to think of the industry as benefiting the west only. It is true, it has benefited the west. Alberta has received more than half a billion in direct revenues and other western provinces, coming into their own as producing areas, are also receiving new revenues. Ample supplies of natural gas and petroleum products for petrochemicals have attracted more than $100 million in new industries to Alberta.

But the whole nation has benefited too.

Canada now produces almost 70 percent of its own crude requirements and no longer has to import 90 percent of its crude as it did in 1947. This has resulted in large savings of U.S. currency. In addition, the oil industry has attracted a large flow of American investment. This support of Canadian growth has helped convert the Canadian dollar from a protected currency into a free dollar now at a premium on world markets.

The industry’s demand for materials for refineries, service stations, pipe lines, exploration and drilling operations, storage tanks and office buildings have been met by other industries across the nation. The four billion dollars invested by the oil industry has helped create new companies and new lines of business for established companies. Every province has felt the effects of this expenditure.

And, if oil industry forecasts are borne out, these expenditures and their benefits to the national economy will increase. It is expected that in the next quarter-century the industry’s investment will quintuple with between $14 and $18 billion needed for exploration and development and a further $3 billion for refining, marketing and transportation.

While the western oil fields may seem remote to some Canadians, each one of us has a personal stake in every turn of each drill bit as it grinds deep into the earth in search of more Canadian oil.
Leduc No. 1 broke the jinx that had brought Imperial 133 dry holes in succession. It proved western Canada held large reserves of oil and was the prelude to many other fields. With them came new refineries and a transcontinental pipeline network. Today Canadian fields provide enough oil for 70 percent of the nation's ever-increasing needs.

LEDCUC
—turning point of an industry

by HAL TENNANT

It was a true moment for all of us. N. E. Turner, then Alberta Mines Minister, started the first oil flowing.

On November 1, 1946, page 13 of the Edmonton Journal carried a one-column box headed:

21 AUTO THIEVES CAUGHT AT COAST

Below that and, by implication, of far less import, was a small story headed:

DRILLING IS PLANNED SOUTH OF EDMONTON

As events were to show, the important news was contained in the first two of the second story's five short paragraphs:

"Two major oil companies plan to commence drilling in the Leduc and Wetaskiwin areas shortly, according to reports in oil circles. "One well, to be located 13 miles southwest of Edmonton, will be drilled by Imperial Oil. This well may be a deep test to a depth of 7,000 feet."
Thus did Edmonton first learn of the wildcat drilling venture that was to touch off what is, to date, Canada's most important oil development. The name Leduc in those days signified nothing more than a little farming community of 800. Today it is almost a household word, a synonym for solid prosperity and for oil itself. To oil men it suggests the beginning of a series of successful oil fields across the prairie provinces: Redwater, Golden Spike, Stoney Plain, Wizard Lake, Pembina, Smiley, Steelman, Daly, Virides and several dozen others as well. To Canada, as a nation that was producing less than 10 percent of its own crude oil requirements, it has come to mean the discovery of the oasis and the end of the drought.

Imperial Leduc No. 1 well meant none of these things to anyone when the wildcat crew spudded in the hole 19 days after the Journal story appeared. In fact, if any crew member had suggested this was the beginning of a commercial field, let alone the start of the largest oil field found in Canada up to that time, he would have been laughed off the rig as a hopelessly green hand.

And there was plenty of reason for such skepticism. By 1947 Imperial had been drilling in the west for 30 years and all it had to show was a trail of dry holes—133 of them. Though Imperial drillers had been plagued with bad luck, other companies had made some small discoveries. California Standard had proved some long-standing theories by finding a small field of oil in 1944 in the Devonian formation at Princes, in southern Alberta. Now Imperial wanted to know if the Devonian around Edmonton might be similarly endowed.

It was. Toolpush Vern Hunter and his crew ran into hopeful signs of oil and natural gas when the drill passed...
Hardships wrought by rugged climate and remoteness didn't stop the oil search in northern Alberta and NWT through the formation geologists call the Lower Cretaceous. Then, early in February, as the bit passed the 5,000-foot mark and chewed into the Devonian, there were showings of oil in the drilling mud. Hunter and his crew crossed their fingers, drilled a little further, and then got ready for a production test.

Gambling against the strong possibility of failure, the company invited press and radio reporters, government people and others to see the well come in, on February 13, 1947. It was a bold gamble. Even assuming there was enough oil for a commercial well, Hunter himself could not forecast whether it might take hours or days to coax a steady flow of oil to the surface. But the crew made the gamble pay off. Working feverishly to overcome a last-minute breakdown, they managed to put on an exciting show for the 300 persons who stood around the rig, chilled to the bone by the crisp winter cold. At four p.m. the crew pulled out the swab which had been lifting drilling mud out of the hole, and a driller's voice rang out with excitement.

"Here she comes!" he shouted, "She's coming in!"

A mixture of mud, oil and natural gas roared out of the open end of a pipe attached to the wellhead. The roughnecks spun valves and directed the flow out over the pit where rock cuttings and spent drilling mud had been dumped. When the worst of the mud was cleared, they spun the valves again, and the stream spurted

Mushrooming oil reserves called for more refineries

In 1949, Imperial drillers struck oil again and found yet another major field—Golden Spike, west of Edmonton.
Oil at Virden, Man. in 1931! The town thrilled with new excitement and many farmers shared in unexpected wealth

To speed oil to the east, Interprovincial pipe line was launched. It meant new business and new plants for Canada's steel industry

With the prairies supplied, oil men looked east for markets in Ontario

Making the western oil development a one-company show. On the contrary, they saw it as a job for bigger than any one company could handle. Increased competition could be rough, but it was vital. H. H. Hewson, then president of Imperial, made that clear in a statement soon after the Leduc discovery.

Said he: "The job of oil seeking in the west is big enough to be shared by any interest that are willing to put up the necessary stakes, and while Imperial hopes to play an important part in further discoveries its basic concern is for very large domestic supplies. The more people who engage in the search the sooner this should happen."

Many Albertans did just that; including large numbers of city people who scarcely knew an oil well from a hole in the ground. They banded together and chipped in enough to lease some land and hire a drill crew. One such hole was the Yeske No. 1, named after Sam Yeske, a colorful Rumanian immigrant who had fled from a Red revolution in 1927 and arrived at Hanna, Alta., with $5 in his pocket and not a word of English in his vocabulary. He
Within four years of Leduc discovery, western crude had reached Ontario refineries

Lakeport shipyards built mammoth tankers

was already a successful businessman by the time he and 84 others—clerks, labourers, businessmen—chipped in to finance Yeske No. 1. Some put in as little as $250, and their group became known as "the poor man's syndicate" or "the little man's co-op." They could afford to endure derisive nicknames. Yeske No. 1 came in handsomely in January 1950, paying $100 a month for every $2,000 invested. Many others, of course, were not lucky at all, but even the unlucky ventures often helped the industry learn more about the potential oil-bearing strata of Alberta.

Most investors accepted their gains or losses as "all part of the oil game." But there were some Canadian and foreign investors who went into Alberta as late as 1950, looking for a chance to reap some of the reward without running any of the risk. Long after Imperial had developed Leduc and gone on to discover Redwater and several other notable fields, an Alberta government official felt obliged to put the record straight with one group who came begging for "a chance to get in on the ground floor."

"Gentlemen," he said, "I don't want to be rude but I do want to be frank. You don't want to get in on the ground floor. You want a chance to buy proved land, or semi-proved land, at the kind of price it would have brought when nobody knew what was under it.

"If you really want to get in on the ground floor there is lots of room. Millions of acres in this province are still available cheap. They're not in the Redwater area, or the Leduc area, but they're better prospects now than Redwater or Leduc were five years ago. If you want to go out and explore these lands, go ahead."

By the time this incident occurred, western Canada had been the scene not only of a great many recent failures, but of a remarkable number of successes as well. In 1948, oil rigs operating in wildcat (i.e. unproved) territory found half a dozen new fields, including Redwater with 700 million barrels or well over 25 times as much as

It's belly gushing with the first cove of western oil, Imperial Leduc docked proudly at Sarnia on April 24, 1951

At Sarnia, Ont., Premier Ford turned valve sending first western oil into eastern refineries

With the arrival of western crude Imperial's Sarnia refinery could now operate exclusively on Canadian oil

Leduc-Woodbend. Just as the optimism had been saying since February 1947, Leduc was only the beginning. Golden Spike, a field now expected to produce 175 million barrels, headed the list of 1949 discoveries, and 1950 saw the extension of several Alberta fields, the discovery of a few others, and an increasing amount of exploratory drilling in Saskatchewan.

Manitoba made oil news early in 1951, with the discovery of the Daly field, close to the Saskatchewan border, and the western oil map widened still further, later that year, when wildcat drills found gas in northeastern British Columbia. In 1952 the big name was Bonnie Glen, with about 300 million barrels. Then, in May 1953, a wildcat crew found Pembina, which now appears to be the biggest Canadian oil discovery yet. Some 60 miles southwest of Edmonton, Pembina has reserves officially estimated at 300 to 400 million barrels, but unofficial estimates, which seem likely to be borne out by future development, put the ultimate yield at some $1 billion barrels, or nearly twice as much as Redwater.

If judged only by potential productive volume, any other discovery so far since Pembina would have to be considered, in retrospect, as something of an anti-climax. Several, however, have been significant for other reasons. Smiley field, for example, discovered four months after Pembina, was the first important field of light crude oil in Saskatchewan. Light gravity crude is in strong demand because it yields a higher proportion of gasoline than heavy crude. Smiley made Saskatchewan a "hot" area for oil exploration, and today the province is undergoing developments smaller in scale but promisingly similar to those of Alberta's early post-Leduc period.

Today, a thousand miles separate western Canada's most easterly fields, in southwestern Manitoba, from its most westerly ones, in B.C.'s Peace River area, and the industry's box score of successes includes more than a dozen major proven fields, 23 other important producing areas, and a dozen or more recent oil discoveries of considerable significance.

Exploration and production, however, are not the only branches of the industry with a reputation for spectacular achievements since Leduc. In fact the oil seekers and producers would not have had the same incentive to do their work if others had not gone ahead with bold programs of refinery and pipeline construction. Leduc No. 1 had been producing little more than a month when Imperial decided Edmonton would soon need a
Each year the relentless western oil search produced at least one major oil field—in 1953 it was Beausite Glen.

In 1953 Canada's first billion-barrel oil field, Pembina, one of continent's largest, came in southwest of Leduc.

refinery. (Today it has three.) However, a new refinery would take three years to build and would need materials that were then very scarce. So the company bought a refinery which the U.S. Army had erected in Whitehorse for wartime use. It was idle by this time, and the U.S. government sold it for $1 million.

Then began one of the greatest engineering feats ever attempted in Canada's northland. The refinery was dismantled and parts of it were trucked over 919 miles of icy roads to Dawson Creek near the B.C. border. From there they were carried by rail to Edmonton. Units that were too big for road shipment were hauled by rail to Skagway, Alaska, shipped down the coast to Vancouver, then sent by rail to Edmonton. In 17 hectic months from the time the decision was made, the refinery was on steam at its new location. Its total cost, including moving and re-assembling, came to $8,700,000, about as much as a new refinery would have cost, but the company had gained 19 valuable months of refining time. Since then, the refinery has had to grow to keep pace with the expanding western market. Its original capacity of 6,000 barrels a day has been quadrupled, and its facilities now include western Canada's only lubricating oil plant, completed in November 1955, at a cost of $14 million.

The industry's accomplishments in pipe line construction are no less spectacular. In the 10 years after Leduc hundreds of miles of gathering lines were laid in the young oil province. By 1950, with Alberta's new fields producing more than enough oil to meet prairie demands, the pressing need was for some means of getting the crude oil to more distant refineries. Here again, Imperial came up with a plan, and sponsored the construction, in record time, of the Interprovincial pipe line.

Interprovincial, in which Imperial has a minority interest, was originally built over a 1,129-mile route from Edmonton to Superior, Wis., on the western shore of Lake Superior. Lake tankers carried the crude the rest of the way to Sarnia. The pipe line cost $76 million and was built in one year. In 1953, the line was extended another 643 miles to Sarnia, to eliminate the problems caused by the winter closure of lake shipping. Pumping stations and looped lines have been added to bump the line's throughput. Another extension of the line, from Sarnia to Toronto, is expected to be built this year. Even without this new extension, Interprovincial is already the world's longest crude oil trunk line. As well as supplying Ontario refineries which had previously imported most of their crude oil, Interprovincial prompted construction of seven new refineries along its route and hastened the expansion of several others.

Even after capturing most of the huge Ontario market for crude, western oil producers needed more outlets for their rapidly increasing production. Looking westward for new markets, the industry tackled a project which some economists said was not financially feasible and some engineers labeled physically impossible—the construction of the Trans Mountain pipe line from Edmonton across the Rockies and on to Vancouver. Trans Mountain, begun in 1952 and finished the following year, was laid over 718 miles of mountains, rivers and valleys to carry Alberta crude to Pacific coast refineries. A 69-mile extension, added later, goes into the state of Washington where two refineries have been built and others are planned.

It was bold ventures like these that helped inspire western oil men to keep seeking and developing new sources of oil. At the time Leduc was discovered, western Canada had about 400

To supply Pacific coast markets, the 718-mile Trans Mountain pipe line spanned the majestic Rockies.

Pipe line over Rockies takes oil to B.C. and export markets.

With Trans Mountain pipe line linking the Pacific coast to prairie oil wells, there was one of coastal refineries to work from California to Canadian oil.

Soon after the pipe line was completed, Japan imported some Canadian gasoline.

12

Imperial Oil Review, February 1957
producing oil wells. Today it has nearly 26 times as many—some 10,360. Average daily production of all western oil fields combined amounted to some 19,000 barrels in 1946. This was less than 10 percent of Canada's total needs. Today, in spite of a staggering increase in demand, the post-Leduc development has brought Canadian crude oil production up to almost 70 percent of Canadian requirements, with an estimated average daily production in western Canada last year of about 465,000 barrels.

According to current estimates, western Canada's proven recoverable reserves of petroleum liquids—the crude oil and natural gas liquids actually known to be in the ground—amount to some three billion barrels, compared to 72 million barrels at the end of 1946. So, even though Canadians have been using oil at an ever-increasing rate, they nevertheless have reserves 38 times as great as before Leduc.

Finding and developing this vast store of energy has cost a lot of money—well over $2 billion since Leduc. During last year alone, the industry spent some $500 million developing known fields and looking for new ones.

Substantial portions of this additional capital have been invested by new companies whose entry into western Canadian oil exploration has made the business more hotly competitive than ever before. At the time of Leduc, Imperial had fewer than 20 competitors active in exploration; today there are 480. Naturally, a lot more exploration is getting done these days. At the end of last year the industry had some 187 million acres under exploration, compared to 20 million at the end of 1946.

With such vast areas already being surveyed, is there much potential oil land left to explore? To anyone who has never truly conceived the vastness of the western plains and foothills, the answer to that question is likely to be surprising. For in spite of all their efforts to date, western oil men themselves are not quite ready to admit they have only begun to scratch the surface. Western Canada contains about 473 million acres of potential oil-bearing land, stretching from the edge of the Pre-Cambrian Shield to the Rocky Mountains and from the U.S. border into the far north. Of this whole area, only about 15 million acres have been explored (although a much larger region has been given a quick once-over). Thus, for every acre explored, 31 others remain to be covered.

That is why western oil men do not believe they are being unduly optimistic when they visualize the discovery of another 25 or 30 billion barrels of oil during the next 25 years, with perhaps half that quantity still left as reserves by that time.

That is their long-range goal, but they know it won't be easy to achieve. Even with the sub-surface knowledge that has been gained and the exploration and drilling techniques that have been developed or improved since Leduc, they hold little hope of substantially reducing the odds against every new wildcat venture. The record shows that a rig drilling an exploratory well has only one chance in 75 of finding a commercial oil field, one with reserves of one million barrels or more.

However, these odds won't deter the western wildcatters for they know that round the next bend there has to be another Leduc, another Pembina.

It was this faith that found Leduc.

---

Leduc and the fields that followed turned Canada, an oil-poor nation, into a major producer of crude oil.
At Imperial's invitation, 60 of Canada's most brilliant scholars met for two days in Sarnia to discuss some scientific and educational problems of the nation

by Michael Jacot
MORE THAN 60 distinguished Canadian scholars met recently in the auditorium of Imperial Oil's new engineering building at Sarnia, Ont. They gathered to talk about matters of vital importance to them, to the branches of science they represented and to the nation.

Imperial Oil had invited university professors, chemists, engineers, college deans, government research men and industrial research laboratory directors to a two-day symposium to mark the official opening of its new engineering and development building and expanded research facilities.

The sessions brought engineers and research men up to date on developments in petroleum research and engineering; discussed research problems of mutual interest to government, industrial and university laboratories, and considered the role and future of the university science graduate.

Though a number of papers were presented by Imperial people, this was not a one-sided meeting. The delegates, whose backgrounds and experience gave them widely divergent views, entered into all sessions with the enthusiasms usually associated with political meetings of the past. Questions and opinions flew thick and fast, and from this give-and-take of trained minds came what many considered to be the symposium's greatest success—the exchange of views which opened up new avenues of thought and venture for both Imperial and its guests.

Much of the two days were spent in discussions, which were partly practical and partly philosophical. These discussions were in the main led by panels drawn from the guests. Some of the subjects where the humanities and the sciences met were: the careers and problems of research workers, staff relationships and the role of institutional research.

As the future of the sciences which these men represented depended upon the men and women who will enter them in the future, the subject of the university graduate was tackled by many speakers.

He was the subject in part of a talk by Imperial's president, J. R. White, who opened the two-day sessions. Mr. White observed that while the shortage of trained manpower in industry is a problem, far more important than the quantity of educated manpower is its quality. He said that it is possible to multiply the effectiveness of a first-class mind by the techniques of organization, mechanization and communication, but it isn't possible to synthesize a first-class mind out of any number of second-rate intellects. "It would be most unfortunate if permanent shifts in approach were based on a temporary situation," said Mr. White.

The oil industry had been fortunate in its experience with the problem of maintaining a supply of technically trained personnel, he said. Though the industry has extended its operations in the past 10 years in many phases—crude production, pipe lines, petrochemicals—and has had to cope with a threefold expansion of business as well, it has secured adequate staff. "While part of our manpower problem has been solved by "importing," by far the bulk of the task has been accomplished by retaining existing staff. All but one-fifth of one per cent of Imperial's staff are Canadian citizens."

Mr. White was followed by Dr. George Gurd, manager of Imperial's research department, who said that his group is continually seeking the "creative scientist." For on him depends the future of the petroleum industry. Dr. Gurd and C. Paul Warkentin, manager of the company's engineering division explained the functions of their groups and how the research and engineering programs were devised, developed and then often integrated.

"As Imperial's business is to supply energy in its most readily available and economical form, the research group's job," said Dr. Gurd, "is to see that continuing supplies are available in the right form at the right time at the lowest cost. Some of us do exploratory research for ideas that are new and different and may be useful. Others are busy in trying to translate these ideas into practical terms for tomorrow. Some keep their eye on the present. Lone wolves and teamwork are included because what is done and how depends on the individual and the problem at hand. Some of these men get their inspiration suddenly and unexpectedly; others after years of experience; some from the library and some by accident. Good ideas don't come too often, and usually there is a background of hard work and disappointment."

The vital activities of the engineering division were illustrated by Mr. Warkentin with a description of the process by which Imperial automated its $14 million lubricating oils plant, opened at Edmonton in November 1955. He explained that his group was engaged mainly in original engineering: the conception, designing, estimating of cost and supervision of refinery construction.

In the past decade it has supervised the spending of $215 million on refinery facilities. As an example of the vast changes in refining equipment and processing he said that the gasoline quality needed in today's family car would have satisfied aircraft in World War II.
After this first session, designed to provide a background of Imperial's activities for future discussions, the meeting divided into two groups. One was composed of those interested in research; the other of those wishing to discuss engineering topics. Within these broad categories, the guests split into smaller parties to talk about subjects of specific interest.

For instance, Dr. L. Picot of the University of Montreal, Dr. K. W. Nealty of the Federal Department of Agriculture and Dr. E. J. Bantle of Polymer Corp. were members of a panel discussing the careers and problems of research workers. The nature and value of post-graduate training was tackled by Dr. P. E. Gagnon of Laval University, Dr. N. H. Grace of the Alberta Research Council and Dr. H. F. Hoerig of Dupont Co. of Canada Ltd.

On the second day Dr. H. G. Thode of McMaster University, Dr. G. S. Farnell of International Nickel Co. of Canada Ltd., and Dr. M. G. Whillans of the Defence Research Board led the panel on staff relationships. The role of institutional research was discussed by Dr. H. B. Speakman of the Ontario Research Foundation, Dr. C. A. McDowell of the University of British Columbia and Dr. D. C. Downing of Shawinigan Chemicals Ltd. The use of scientific manpower was the subject of a discussion led by Dr. R. K. Stratford, scientific advisor to Imperial Oil, Dr. C. B. Purves of the Chemical Institute of Canada and Dr. J. W. T. Spinks of the University of Saskatchewan.

The two days were not taken up completely with serious discussion. The symposium brought together some who knew one another only by reputation and enabled them to compare notes, in and out of sessions. They talked about many things besides petroleum research.

At coffee breaks, in the corridors outside conference rooms, at lunch and in hotel rooms, the discussions sometimes turned to lighter veins. Some college acquaintanceships were renewed. One learned gentleman was seen in a corridor giving an animated impression of the part he played in a long past college rag. One of the oldest men present, Imperial's Tom Montgomery who started with the company in 1897, was heard expounding to an amused luncheon audience on the archaic ways a refinery's work was made to do the old days.

Dr. J. R. Phillips, McGill University, Montreal, told during a coffee break how engineering research in his early days sometimes consisted of work in a kitchen with a teapot and a bunsen burner. "With the equipment possessed today," he said, "we should be able to do things we never dreamed about when I was young. But it is brains more than equipment that we need now." Dr. H. G. Conn, Queen's University, Kingston, on the way from a panel discussion, said that such sessions between industry and the scholastic world were really vitally needed. Both sides would learn a lot by regular discussions.

At the end of the second day all the participants attended a ceremony at which new research and engineering development facilities were opened by Dr. E. W. Stewart, president of the National Research Council. In his address Dr. Stewart urged that more research be undertaken in Canada. The function of the university, he said, is by no means merely to teach. Research should be continued there and accelerated. "We would be no better off if we succeeded in increasing the number of graduates in science and engineering but did so merely by diminishing their quality." The increase in the need for technically trained people should not be allowed to change the character of the Canadian university, he said.

Perhaps the best summation of the two days came from a professor of chemistry whose presence has illuminated lecture halls for many years. He said, "We scientists feel we know a lot about a lot of things. As tomorrow dawns, and new avenues are opened up, we suddenly realize how little we knew yesterday. A conference like this makes us realize not how far science has come, but how far it still has to go."
Gambling boldly and steadfastly, men like colorful Kootenai Brown and hard-driving William S. Herron kept alive the 90-year, almost fruitless, search for oil in western Canada

**THEIR TRAIL LED TO LEDUC**

by Mark Andrew

probably the most memorable meal ever eaten in western Canada was a snack of bacon and eggs which three men—one of them a future prime minister—sat down to eat at a creek in southern Alberta.

The year was 1912. The future prime minister was R. B. Bennett. The name of his fellow-guest is not on record. But their host, William Stewart Herron, will be remembered as long as men are still telling the true tales of Alberta’s oil history. Herron, a farmer and a former hard-rock miner, was far from wealthy, but had tied up his money in land holdings. With the help of A. W. Dingman, then one of Calgary’s most experienced oil men, he tried to interest several well-to-do Calgarians in a natural gas seepage at Sheep Creek in Turner Valley. None of them was easily convinced that drilling would be a reasonable gamble, since no oil or gas wells had been drilled in the valley before. Then Herron took a couple of them out to the site, touched a match to the seeping gas and fried up a mess of bacon and eggs. That closed it. Ten of them brought Dingman in with them and formed a syndicate, which soon became incorporated as Calgary Petroleum Products Co. A year and a half later their first well hit a prolific flow of natural gas and—through no fault of theirs—touched off the most hysterical stock-buying spree Alberta ever saw.

Herron has been described as “one of the roughest, toughest hard-driving personalities of his time.” But he was not the first colorful oil man in western Canada’s pre-Leduc era and he was far from the last.

Before him came men like John George “Kootenai” Brown, a leather-faced ex-soldier who started searching for oil by mixing drinks out of molasses and kerosene; and Mc Ardle and French, a pair of prospectors who swamped a saddle pony for an Indian’s secret and wound up with a gusher of water. After Herron came the late Major Jim Lowery, who paid $1 million for a lease on 160 acres which, as it turned out, were not worth drilling; and Robert A. Brown, who finally raised enough money to find the oil the experts had said couldn’t be there.

While each was a pioneer in his own way, Kootenai Brown was a pioneer in the old western tradition. Garbed in buckskin jacket, blue jeans and a big slouch hat over his flowing locks, he rambled in Pincher Creek district, southwest of Calgary, beginning in 1862. He was not the first white man to find oil in western Canada—Sir Alexander Mackenzie happened upon seepages in the north country a century before—but he was the first to conduct a successful search.

After hearing rumors of seepages in his region, Brown mixed up a concoction of molasses and kerosene one day in 1886 and served it to some Stoney Indians, telling them to let him know if they ever found anything tasting like that. Soon the Stooneys were back with a story about seepages along a small stream called Cameron Brook, near Waterton Lake, in what is now the southwest corner of Alberta. Brown collected some of the oil by throwing gunky sacks onto the ground and wringing them out. He used it to lubricate his ranch machinery. Later one of his men, a Mormon named William Aldridge, channeled the oil into pits and sold it to other ranchers as a lubricant, lamp fuel and cattle dip. It fetched a dollar a gallon—more than 13 times as much as any Alberta producer gets today, even with today’s inflated national economy and heavy demand for oil products.

About five years later two prospectors, William Mc Ardle and Lafayette French, heard of Indians getting “medicine” from seepages along Pincher Creek. They finally learned the secret location by offering a beautiful little bay saddle pony to

W. S. Herron and the Dingman well helped bring in.

R. A. Brown Sr., aント
Legend in oil, and his son Robert

Imperial Oil Review, February 1957
and ran for their lives as fast as their legs could carry them.

Watching from a safe distance they could scarcely believe their eyes. The gas pressure gradually lifted the casing 60 feet out of the hole, its upper portion standing erect like a giant steel serpent with its head jammed into the top of the derrick. Then, as the gas began to blow up around the outside of the casing, the 98 tons of steel settled back into place.

On the morning of Sunday, November 9, the well caught fire. In the huge jet of gas was a tower of flame. In half an hour the whole rig was a charred and molten wreckage. After several days a brave little group of men managed to get their steam boilers in close enough to douse the flaming gas. Two other fires broke out after that but on December 19 the well was brought under permanent control.

As spectacular as it was on the make-up, Royalite No. 4 is remembered most for having established Turner Valley as a major source of wet gas and for inspiring the formation of several important independent companies, such as Home Oil, Oklahoma and others. It was Hone's founder, Major Jim Lowery, who made a million dollar deal that restored the investing public's faith in Turner Valley at a time when many were still bitter about earlier market losses and suspicions of every oil venture. Robert A. Brown and Fred Green, who together ran a company called United Oils, approached Lowery, offering to sell a lease on a quarter section of land adjacent to some wells Home had brought in late in the Twenties. Brown and Green had agreed to ask $750,000 and probably would have settled for $500,000, but when Lowery asked them to name a price, Brown made a snap decision.

"A million dollars," he said. Lowery didn't hesitate. "You've made a sale," he replied. The deal was completed for one million dollars.

A few weeks later Home's geologists discovered something neither Lowery, nor Brown had known: the quarter section was outside the producing formation. It wasn't worth drilling. But by the time this rather important fact was disclosed, Lowery's gambling spirit had inspired many small investors to try their luck again in Turner Valley.

Like Lowery, Brown became a near-legend within his own lifetime. At the time of his deal with Lowery he had been a director of United Oils for about four years and he was convinced there was a lot of oil to be found in Turner Valley. This idea became almost an obsession. In the early Thirties he organized a syndicate called Turner Valley Royalties and got set to drill the hitherto unexplored southwest flank of the valley. The hole was spudded in April 16, 1934, and should have taken six months to drill. It took exactly two years and two months. Brown's problem was money. The general optimism inspired by the Lowery land deal had died down and depression dollars were scarce. Seven times he ran out of money and had to stop drilling until he raised enough to get going again.

Finally, on June 16, 1936, the well blew in from 6,600 feet—not with gas but with oil. From then on Brown never lacked capital. Within a week he had taken in $400,000 in cash and pledges—enough to drill three more wells.

While the rigs moved in to push up the field, Calgary was feverish with excitement. For some it was just an excuse for another stock-promoting spree, but for the Canadian oil industry it was the most significant achievement yet. Canada at last had the makings of a major oil field within reach of a major market. Imperial had discovered the Normin Wells field in the Northwest Territories in 1920, but it was too remote for development at that time. Even former skeptics began visualizing other big oil fields in Alberta. The trick was to find them—if they really were there.

Imperial, which had been searching for oil in western Canada ever since the time of Normin Wells, began stepping up its exploration of Alberta and Saskatchewan. Everyone knew the odds were heavily against an overnight success, but nobody dreamed of a search as long, as discouraging and as costly as the one that followed.

Parties of Imperial geologists roamed the plains and foothills, looking for rocks suggesting underground structures favorable to the accumulation of oil. Soon Imperial began backing up its geophysical work with seismic equipment which up to that time had not been used extensively in Canada. As
geophysicists, the seismic crews followed up the geologists’ work with their own concentrated surveys of the more promising areas, setting off small underground explosions and studying the electronically-recorded shock waves that bounced back from underground rock structures.

From 1940 until February 1947 when Leduc field was found, Imperial’s survey parties covered 20 million acres in Alberta and Saskatchewan. For a month’s work it cost $1,500 for a geological party, $15,000 for a seismic party.

And not from either group could anyone expect any final answers about the possible presence of oil. The only true test then, as today, was the drill. Accordingly, drill crews used the survey results merely as clues for locating one wildcat site after another. In the last seven years before Leduc, Imperial spent $7 million on wildcat drilling alone; and had the drillers been seeking dry holes, they could have claimed an almost unblemished record. In the 10 years before Leduc they drilled 114 holes that proved dry, to a total depth of more than half a million feet, or 96 miles. Drilling cost $7 a foot in the plains and up to $50 a foot in the toughest parts of the foothills.

In 1947 Leduc No. 1 came in to open a new oil era for Canada.

For anyone who understood exploration and drill costs it wasn’t hard to see how Imperial had spent $134 million on the western oil search between 1939 and the end of 1946; what was hard to see was how the company could go on spending $316 million a year without a cent of return on its investment.

No more than 10 to 20 companies were ever in the search at any one time (480 operating groups were exploring or producing in the west in 1956), and for several periods exploring companies numbered as few as a half dozen. One major oil firm that had spent several million dollars on the search decided to divert its capital elsewhere. It dropped its land holdings near Edmonton, including extensive acreage where one of Canada’s largest oil fields has since been developed.

Everybody recognized the national’s desperate need for new oil resources (Canada was paying stiff prices to import nine times as much crude oil as it was producing at home), but very few people still believed that western Canada might provide even part of the solution. Hopes had risen from time to time when a drill crew would get a small showing of oil from a wildcat well, but most discoveries soon petered out or turned sour, and none revealed a deposit of any great size.

By mid-1946 Imperial’s survey parties and wildcatters had criss-crossed southern Alberta and parts of Saskatchewan. The next step was to take a look at the central part of the province, around the same latitude as Edmonton. Imperial’s geologists already knew the nature of the underground structure in a fairly large area east of Edmonton, for natural gas and heavy crude oil had been found around Lloydminster on the Saskatchewan border, and large gas deposits were being developed south and west of there, in a field named Viking-Kinsella. The natural thing was to swing the seismic and drilling operations westward through to the foothills.

That’s how it was that Imperial sent a drill crew into the area about 15 miles southwest of Edmonton in the late fall of 1946. The crew put up its derrick, hung up a sign that said Imperial Leduc No. 1, and spudded in on November 20. Since beginning its western oil search Imperial had drilled 133 dry holes and this one looked like the 134th in the making. But on February 4, with the bit down to Devonian limestone, almost a mile below the surface, drill stem tests began showing signs of oil. The crew stopped drilling, inserted 5,029 feet of seven-inch casing, and got set for a production test.

On February 13 the well came in. Optimists in the industry proclaimed the event as the start of a whole new era in the development of Canadian oil resources. And for the first time in two decades they were right. The field that developed from Imperial Leduc No. 1 had produced more than 140 million barrels of oil by the end of 1956 and probably will produce a total of 250 million barrels of oil—twice as much as Turner Valley.

At the time of the discovery, however, most old-timers in the company would only wait and see. They had seen too many wells of equal promise come up a spout in a week, or two. This attitude was reflected in the company’s official pronouncements at that time, such as the statement issued by an Imperial spokesman the day after the well came in:

“The results,” he wrote, “are encouraging and Imperial is hopeful of developing a commercial field . . . . however . . . favorable indications . . . can quickly lead to numerous production tests and the drilling of additional wells.”

Happily, his caution proved unnecessary, but it was—and still is—understandable. Nobody who has gone through 20 years of oil business can be expected to have convinced that his fortunes have taken a turn for the better.

For the past 10 years, any suggestion to a Calgarian or Edmontonian that his city was not the oil capital of Canada was enough to start a heated argument. But now they’re ready—almost—to share the crown.

Mayor Donald MacKay of Calgary

Mayor William Hauerol of Edmonton

The friendliest feud in the west

by HUNTER ELLIOTT

For 10 years the boosters of Calgary and Edmonton have studiously matched wits, words and slogans in efforts to persuade the rest of the country that their town is the hub of the western oil industry.

Chambers of Commerce deftly slip the message into their brochures (“Calgary . . . solidly established as oil capital of Canada”); radio stations use it as a selling point (“Edmonton—Canada’s oil capital, North America’s fastest growing city.”); Edmonton service club members tirelessly rib their Calgary counterparts over Edmonton’s industrial expansion.

Calgary loves to spoof Edmonton about the cowboy’s oil company headquarters. Once, Calgary Mayor Donald MacKay reportedly attended the opening of an Edmonton plant with: “This is your show so I shall say very little. I have a message for you, though—I bring greetings from all your head offices.”

But to the boosters’ dismay, the rest of Canada persists in treating Calgary and Edmonton as equals. A department store chain is building a new unit in each city; the provincial government is completing identical civic auditoriums in each; the Dominion Bureau of Statistics cites metropolitan Edmonton and metropolitan Calgary as the fastest growing metropolitan areas in Canada. Since the last census both have grown by approximately 40 percent.

And Edmonton and Calgary partisans are beginning to realize what outsiders knew all along: there’s no such thing as one Alberta oil capital. Both are capitals, in a sense, with individual roles and distinct personalities.

Edmonton is the calm, technical and industrial giant, key centre for refining and the many satellite industries that go with oil. Calgary is the free-wheeling headquarters town where
million-dollar exploration and drilling decisions and gambles are made. Neither could exist without the other and both owe a great deal of their present prosperity to the discovery of the Leduc field.

Ten years ago Calgary’s 100,000 people—a few oil men but mostly cowhands, farmers and small businessmen—dwelt in the crook of the Bow and Elbow rivers with a splendid view of the Rockies on clear days, one week of glory during the Stampede and 51 weeks of wintry memories of the time when Turner Valley (38 miles southwest) made Calgary boom town.

At Edmonton, 195 miles north on the Saskatchewan, the 118,000 people had their provincial University of Alberta, their provincial government offices, their small industries (largely related to dairying, meat packing or farm machinery) and their quiet dignity. Edmonton served a fertile farming area but the farmers, unlike Calgary’s ranchers, were not demonstrative people. Germans, Ukrainians, Scandinavians, they’d started with little, come up the hard way and weren’t inclined to gamble. Planting wheat was gamble enough, some years.

Then came Leduc, 174 miles north of Calgary, a mere 15 miles southwest of Edmonton. Since then both cities have about doubled their population—greater Calgary to 196,000, greater Edmonton to nearly 249,000. The downtown areas of both are being transformed with new construction, most of it directly or indirectly related to oil. But otherwise oil merely accentuated their pre-Leeduc differences.

Edmonton, with raw material, cheap fuel and petroleum products at its feet, automatically became more industrial, although a few oil companies have headquarters there, too. Calgary, with about a dozen head offices lingering from Turner Valley days, automatically became more of a headquarters town. Now, about 250 oil companies make their Canadian (and, in many cases, North American) headquarters there.

Calgary has industries, too, but the biggest, most dramatic industrial development is in Edmonton. Ten years ago its environs were pastures and wheat fields. Now the wheat has given way to sprawling factories and three refineries, led by Imperial’s 25,000 barrel/day plant.

Some industries came to serve the oil boom, like the refineries and Edmonton’s 117 oil-field equipment and supply firms. Others—including a sulphuric acid plant, a glass company and a cement company—have come or are coming to utilize the area’s natural gas as fuel.

Some of the biggest plants are those that turn petroleum products into the basic ingredients of such consumer goods as lipstick, brake fluid, sweaters and toys.

On Edmonton’s eastern edge lies the $13 million polyethylene plant of Canadian Industries Ltd. Pure ethane is essential to the manufacture of polyethylene, which is one reason why CIL picked Edmonton. The natural gas from Imperial’s gas conservation plant at Devon, near Leduc, yields a good supply of excellent ethane. So from CIL in Edmonton come tiny white polyethylene cubes which plastic factories elsewhere turn into things we all use: kitchen containers, washable non-toxic toys, non-corrosive pipe and the film-like packaging that sometimes wraps ladies’ sweaters.

A few miles east of Edmonton, at Fort Saskatchewan, Sheritt-Gordon built a $17 million plant—again, because of natural gas. The plant uses natural gas as a raw material for making ammonia which, in turn, is an agent in the production of nickel, copper sulphide, anhydrous ammonia and ammonium sulphate.

Edmonton’s wheat fields and pastures have been turned into sprawling factories and refineries

Edmonton’s pride and joy is its $70 million Canadian Chemical Co. plant covering 430 acres

University of Alberta in Edmonton has Canada’s only petroleum engineering course

Edmonton’s $16 million face-lifting brings new skyscrapers
But Edmonton's biggest pride and joy is the $70 million petrochemical plant of the Canadian Chemical Co. It sprawls over 430 acres east of town, almost a city in itself, turning out textile products and two categories of chemical products. With butane and propane from Edmonton gas fields, products from Edmonton refineries, including Imperial's, and wood pulp from B.C., Canadian Chemical produces the basic ingredients for cosmetics, perfumes, drugs, dyes, food flavoring and the acetate yarn that goes into some clothing and draperies.

What does all this mean to Edmonton? The three last-mentioned industries give an indication: they employ more than 1,500 people, have a combined payroll of more than 56 million and spend many more millions yearly on raw materials, supplies, freight and taxes.

Consequently Edmonton stores are jammed with shoppers, buses are crowded with workmen, and the city is more hard-pressed than most to provide enough schools, houses, sewers, lights and other services. Not only is there an influx of factory workers but there's a small army of oil families—of seismic men, drilling crews, refinery workers and the office personnel associated with them.

Oil has touched even the university. It has the only course in petroleum engineering in Canada and the university extension department has a petroleum industry training service that takes courses to men in the oil fields and operates safety programs for small firms which don't have their own.

With oil touching almost every phase of Edmonton life; with wells, flares and the scent of petroleum in the air, 20 minutes' drive from town; with more oil employees here than in any other city in Canada, one would expect this to be a fast-talking hard-living boom town.

But Edmonton isn't. Perhaps it has been too busy to get excited. Edmonton rarely lets its hair down over anything except its Grey Cup winning football team, the Eskimos. Two years ago, in fact, it persuaded university freshmen to forego their usual helter-skelter snake-dance through downtown for a sedate bus ride (with police escort!) to a coffee-doughnut-dancing session in an arena at the city's expense. In Calgary, they'd probably have clapped cowboy hats on the snake-dancers' heads and waved them on.

To many citizens, 42-year-old Mayor William Hawrelak epitomizes Edmonton. Bill Hawrelak grew up on his Ukrainian father's farm. A hailed-out crop scuttled his plan to attend university so, instead, he farmed, sold insurance, managed a boarding works, served as school trustee and alderman. Today, a poised, articulate mayor, he fulfills his duties without engaging in pillow fights, foot races or plowing matches. Edmonton likes him that way; he's in his sixth year in the mayor's office.

As a longtime Edmontonian remarks, "We're not flag-wavers like Calgarians."

Whether you call it "flag-waving" or "western spirit" the cowtown has always had it. Leduc merely brought it out like measles. Calgary's old-time ranchers did things in the grand manner, whether they were buying a thousand acres of grassland, staging a saloon fight or betting on a royal flush. When the oil company executives with their spirit of adventure moved in, they felt right at home.

Economically there've been changes, of course. Calgary's bank clearings are now more than $3 billion a year, about three times the pre-Leduc figure. In 1955 Calgary issued 5,515 building permits worth about $56 million compared to 2,578 worth about $880,000 in the Leduc year.
Last year 234 new firms came to Calgary; that's approximately as many as the town had altogether before Leduc. Today Calgary claims a total of 455 small manufacturing firms, 930 construction firms, 198 petroleum service and supply companies, and about 3,500 other firms or businesses. Its oil company employees and their families alone have swollen the population by about 15,000. One way or another the petroleum industry has accounted for about 55 percent of the city's population increase since Leduc.

With more air traffic (oil had a share in this, too, and not only from the standpoint of scheduled flights; 60 to 70 oil company planes are based at Calgary) came an elegant $1 million air terminal in 1956. It has such extras as piped-in music, sleeping quarters for eight travelers stranded between flights and an electronically-controlled baggage room for speedy delivery service.

This ultra-modern look is evident downtown, as well. Downtown Edmonton is larger and, at the end of 1956, was in the middle of a $16 million face-lifting with several modest skyscrapers, but Calgary had the "new" look first. "Cowtown" is strictly a nickname; Calgary's a modern metropolis. One-way streets and a new cloverleaf-bridge artery handle the 60,000 automobiles (there were about 16,000 in 1945). New banks, shops and oil offices (three of the latter worth a total of $3 million) line Ninth, Eighth, Seventh and Sixth Avenues. An all-glass office building and a 10-storey office on stilts with parking space beneath are part of future plans. At noon well-dressed businessmen and stenographers crowd the streets. Even an Edmontonian admits, "There's a quicker pace to Calgary. They're doing business all the time, even over the coffee break." An executive of a New York real estate investment firm, S. Joseph Tankski Jr., visited Calgary in 1956 and called it "one of the most dramatic cities in North America."

Much of this dramatic quality comes from its oil men, only four percent of whom are American-born. They apply their oil-business flair and imagination to everything they touch in Calgary, be it Boy Scout or church work (in which many participate), the Calgary Stampede (many oil men are on its board of directors or, sometimes, in the way they give away money. For example, in 1948 Calgary oil man Clifton Cross was injured in a plane crash and couldn't use his Grey Cup tickets. Most people would have sold or given them away. Cross had a friend raffle his in Toronto and earned $500 for Calgary's Red Cross crippled children's hospital. This same imaginative flair accounted for Calgary's trade-mark—the white 10-gallon hat. Prior to Leduc nobody but cowboys wore cowboy hats in Calgary. Since Leduc scores of Calgarians resemble the Lone Ranger—from the ears up—and the city or individuals have given about 1,500 white hats to visitors. Winston Churchill got one by mail and sent back a thank-you note. Prince Askhat of Japan has one, as does Dame Flora McLeod of Scotland and the members of a Russian soccer team.

Ten-gallon hats appear on Calgary wallpaper, crockery, the airport door handles and, most often, on the head of Mayor Donald Hugh Mackay, the ebullient ex-radio-announcer who took lessons in horseback riding when he became mayor in 1950. He sports several cowboy hats, including a hat-shaped cement birebath. Once, a sign manufacturer mounted a neon Santa Claus on Mackay's roof—complete with cowboy hat.

But Mackay credits the hat idea to William S. Herron, Calgary oil executive and son of one of Turner Valley's oil pioneers. Herron and his wife, Madeline, ride their own prize-winning show horses in many North America horse shows. Mrs. Herron beards and embroiders lavish western riding costumes. Herron decorates saddles with gold, silver and synthetic rubies and hunts up fancy cowboy hats. One year he asked a Calgary hatter to make some white hats.

"The manufacturer was reluctant," says Mackay. "He thought they'd dirty easily and wouldn't be popular with cowhands. Herron offered to buy the material in exchange for a share of the profit. But that set the manufacturer to wondering, so he finally made a few on his own. Bill Herron wore one in the Stampede parade and the others sold out so fast it made the dealer's head spin."

The hat became a hallowed Calgary tradition. Now even Edmontonians wear it on Grey Cup weekends, and Calgarians hardly grumble at all. And, Calgarians even cheer the Eskimos, albeit grudgingly. Perhaps this is the first sign that Alberta's twin oil capitals are ready to share the crown.

This pile of drilling bits—some as big as a man's head—are only a few of the 601 bits used to drill a one million dollar disappointment in the Alberta foothills—the Stolberg well. This hole went down to 13,747 feet and proved dry. It was one of 133 dry holes drilled in the west by Imperial before the Leduc discovery. It took nearly two years.