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EDITORIAL

WHEN we were preparing the story on gasoline prices, which starts on page 16, we compared the price of gasoline with many commodities. Some of the comparisons you will find in the story. We compared gasoline with other fluids in general use. We found the result so interesting we thought we would pass it on.

Against the average price of 40.3 cents for a gallon of Easo gasoline, you will pay an average of 88 cents for a gallon of milk; 60 cents for a gallon of distilled water; 89 cents for a gallon of coffee (if you make it yourself); and $1.89 for a gallon of the largest selling soft drink in Canada.

To us it was just another illustration of the fact that gasoline in relation to any general yardstick like wages, salaries or the cost of living is one of the most inexpensive commodities in general use.

We are proud of the fact that gasoline—in this era of post-war inflation—has held the price line better than almost any commodity that can be named. The relative cheapness of gasoline is the result of competition throughout the industry which starts before the drilling bit grinds into the rock in search of oil, and ends when your local service station attendant fills your car’s tank with Easo gasoline.

Because so many persons use gasoline, both for pleasure and in their daily occupations, there has been wide interest in gasoline prices. Petroleum pricing is a complex matter, and it is in the hope that it will add to the general understanding of this subject that we present the story on gasoline pricing. “The Bargain at the Pump”

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AUGUST * 1954

Picture Credits:

Prairie Pioneer Goes Modern

THE ox-team drawing the settlers’ wagon plodded along steadily in the surf-like hiss of the falling rain. The boy, from his perch beside his father, could see a blue break in the cloud ahead and almost beneath it, like a ribbon cutting across the countless acres of prairie, a creek.

Indians had told the boy that the place was called Wascana, Pile of Bones. It had been a buffalo slaughtering ground, and the area was littered with sun-bleached bones.

Suddenly, from behind came the sound of horses at speed. A sleek black carriage drew alongside. It stopped at the creek and a dignified gentleman climbed down. That night the horses and the oxen watered side by side, and excited rumors ran through the small encampment about the mission of the important gentleman.

The next morning the eager-eyed boy in his teens saw an official notice pinned to a nearby tent. It read:

"I hereby give notice that all government land in Township 17, Range 20, West of 2nd Meridian, is Reserved and will continue to be until otherwise ordered.

By order, E. Dowd, Lient. Gov., Northwest Territories,

Pile of Bones; June 30, 1882."

The boy’s name was James Grassick. Mr. Grassick, now 86, still lives on the site of Pile of Bones chosen as a seat of government on that long-ago day. The empty ocean of land, which rolled with a placid swell over the horizon, is now the world’s greatest wheatfield, and Pile of Bones has become Regina, a thriving city of some 75,000, hub of Canada’s most highly-mechanized agricultural province.

Mr. Grassick, perky as a bantam cock, is an honored businessman and civic figure in Regina. Now in business for himself, he represented Imperial Oil in the province for 20 years as the Company’s first agent. He is a man widely known for his public service as former mayor of Regina and past member of the Saskatchewan legislature.

He has witnessed nearly every change in Saskatchewan in the last 70 years, including many important phases in the development of the oil industry.

He was personally engaged in the first phase, when oils, brought in on the newly-laid railway, were supplied to the early settlers. The pioneers needed oil to light their homes, and to grease their implements, and as the settlements grew so did

Star of the re-equipped refinery is a new "oil cracker". Its tall stack towers over the other units of the refinery.
the demand. By 1916, Imperial had built a refinery at Regina to manufacture oil products for the prairies. For two decades the refinery relied on United States crude but in the mid-30s the Turner Valley provided a Canadian source of supply.

The Turner Valley supplies began to diminish at the end of the World War II and for a while Regina again had to depend on imported crude. But Ledcor and the other post-war discoveries in Alberta brought a great new supply of Canadian oil. Expansion of agriculture and industry in the province led to the next step. This was to reconstruct Regina refinery to meet the big increase in the use of gasoline. The new units were opened on June 4 by Premier T. C. Douglas, and among the distinguished guests was James Grassick.

FIRST LIGHT OIL FIELD

While the refinery was being rebuilt, now had come of the first major light crude oil discovery in Saskatchewan. The Smiley field was opened up by Imperial last September, and its crude is now flowing to Regina to supplement the supply from Alberta. The Smiley plies now harvest two crops; wheat from the soil, and oil from far below the wheat. This operation is symbolic of the parts played by the farmer and oilman in Saskatchewan and the west.

The oil industry and Saskatchewan agriculture have grown hand in hand. The one has helped the other grow. Oil provides the power the farmer needs to make his living; it drives his machinery; it is in insecticides used to protect his crop. It delivers the crop to the elevators and builds roads which link cities; lubricates the generators which supply him with electricity and forms the basis of the paint which covers his buildings. Saskatchewan farmers now have more than half a billion dollars invested in machinery, and use more than 120 million gallons of farm gasoline a year to produce over half of Canada’s wheat crop.

The story of oil in Saskatchewan really begins with a train wreck. Young James Grassick was down by the rails watching when the first engine pulled into Pipe of Bisons. To the handful of white settlers in a community of “five houses, a few tents, and some people living in caves on the side of the creek”, that was a great day. The railway brought oil and grease and other materials to help change the place into a bustling little frontier town in a very short time. Imperial had followed the rails across the country, building bulk tanks every few miles to supply the construction. Later, small communities often grew up around the tanks, and they were used to supply settlers.

People began to pour into Pipe of Bisons, and the town mushroomed. The Royal North-West Mounted Police set up headquarters there in September, 1882. Meanwhile other important settlements were developing. North Battleford had been settled in 1877, and was the capital, until the Lieut.-Governor’s party moved to Regina in 1882. That year Moose Jaw and Saskatoon were started. Prince Albert began to be settled in 1886.

In the early days the big demand was for greases and kerosene. Kerosene came to the “far flung lands beyond Winnipeg” in wooden barrels. Farmers set fire to the inside of the empty barrels to burn off the last traces of kerosene, and used them as rain barrels. Sometimes they were sawed in two and converted into wash tubs. Before the Regina water system was started, millions of gallons of water were hauled from wells in these wooden barrels. Steel containers were introduced by Imperial in 1911.

The Riel rebellion of 1885 did little to disrupt the growth of the province. And soon afterwards a large-scale immigration drive was opened up. People poured across the Manitoba border. In addition certain firms in the United States became interested in settling the area, and special trains were run to show prospective settlers the land. The lure was the rich soil of the plains at $5 an acre.

By 1888, Regina had become a fairly well settled place, and Imperial appointed a permanent agent there, James Grassick. He was running a cartage business at the time, and he knew everyone in town and most of the farmers from the villages around. He covered much of his large territory in a wooden cart with the familiar wooden barrels on the back. At one time he also shipped by rail to places as far away as Medicine Hat and the Manitoba border.

EARLY AGENTS HELPED FARMERS

Agents were soon appointed in other centres. Some owned general stores. Others were farmers, druggists, salesmen and travelers. They were friends and advisors to the farmers, not only assisting them with conventional oil problems, but helping them with the special difficulties which arose from the extremes of climate and the imperfections in the early farm machinery.

When Mr. Grassick was appointed agent in Regina the Company operated a temporary warehouse. The 500-lb. wooden barrels of coal oil leaked and some of it got into the wooden walls. Mr. Grassick says, “A couple of boys were sneaking a smoke outside and the whole place went up in flames. Luckily it didn’t damage other buildings”. Imperial then built a permanent warehouse.

Organized communities were spreading on the prairies. Several immigration rushes had taken place. Settlements were west and north. Village stores were set up. The railways fanned out. Churches and schools, warehouses, and government buildings were built. Streets were laid out, and even in those early days people began to record the local history of their communities.

The province was ready to play a distinctive part in the framework of Canada. Up to this time Regina had been the centre of the Northwest Territories. In 1906 Saskatchewan was declared a province.

About this time the first gasoline tractor was sold. An honored guest at the opening ceremony was James Grassick, 80-year-old pioneer and Imperial agent in Regina.

The coming of the tractor revolutionized farming. By 1918, 3,500 tractors were being sold every year in the province. The early machines cost about $1,000 and did the work of some 20 men. Tractors increased acreage, speeded up sowing, and helped solve the perennial manpower problem. Today, on an average farm there is more than one tractor for each of the 122,000 farms in the province.

The tractor, with its elder sister the automobile, started just as big a revolution in the oil business. Previously gasoline had been something olmen couldn’t sell and didn’t know what to do with. It was a waste product in the manufacture of kerosene. Now, olmen could hardly make enough of it.

Gasoline, which at that time was still being brought into the province from the east, changed the life of the farmer. It brought him nearer to his markets, within reach of schools, hospitals, and churches. People in what had been far distant settlements became his neighbors and friends. The loneliness of the prairies was reduced.

In 1908 the demand for oils in the west had become so great that Imperial set up a permanent district office in Regina, and James Grassick devoted full time to his cartage business. He had also been playing a big part in the public life of the city as councillor, and pressure was on him to run for alderman. Later he was five times mayor of Regina, and from 1929-35 a Conservative member of the provincial legislature.

NEW SETTLEMENTS BUILT

Just before the first world war another big immigration drive was started. Hundreds of miles of new settlements were established. Imperial’s bulk tanks which were installed at each key community, soon became as common as the grain elevators.

One of the young men arriving from the old country was Ernart Raile. He joined Imperial’s Winnipeg marketing staff, but he was soon to push on to Regina, where he has been ever since. He is now office manager at marketing division headquarters.

He says: “A salesman’s life in those days was a hard one. He covered hundreds of miles by horse

With the huge “cut cracker” as a backdrop, the new pressing units were opened on June 4 by Premier T. C. Douglas.
and buggy, over very bad roads. The average trip lasted five or six weeks, and many a night was spent sleeping in a buffalo robe on a granary floor or in some lonely farmhouse."

Storage was a big marketing problem at that time. In April every tractor in the province came out to help sow. They would come out again for harvest. Hundreds of storage tanks were built to take the peak loads. The same problem exists today, but tanks used for gasoline for summer use are now filled with heating oil for winter use, and this has helped to even the two peaks.

In World War I the demand for gasoline and oil products to help increase Canada's wheat crop had grown so much that the time had come to manufacture oil products in the province. Imperial decided to build a refinery at Regina. It was to be the first in the prairies and the most important stop the oil industry had taken in Saskatchewan.

Construction started in February, 1916. The weather was bitter cold and the water lines had to be buried 7½ feet below the surface. Several wells were dug to supply the refinery with water, and it still uses wells today. The well had poor flowing value and the workmen had some trouble with the foundations but work was finished by July, except for some pumps which were delayed because of the war. The plant finally went on stream in September, 1916. It was capable of processing about 1,500 barrels of crude a day, and the cost of the project was $8.5 million. Crude was brought in from Montana and Wyoming.

By 1919 extra equipment had been added and the plant was running at 2,500 barrels a day.

Longworthy, the present refinery superintendent, joined Imperial in 1927, and he remembers at that time the capacity was increased to 6,000 barrels a day.

The Thirties were "the bad years" of the drought in Saskatchewan. Imperial was one of the first organizations to help the farmers out of their plight. The Company cancelled all back interest on debt and reduced future interest.

**Turner Valley Discovered**

Mr. Longworthy says, "The one bright spot in the picture, was the big new discovery of oil at Turner Valley in 1926. The field had been producing naptha gas for some years, but afterward Regina received its crude from there. The oil had a very high sulphur content and a special plant had to be built to remove it. This was one of the many innovations put in by the Company to keep the oil flowing to the Saskatchewan farmers. In all we have processed more than 30 different crude at Regina."

*Just before World War II another era of prosperity began on the Saskatchewan plains."

Crude was pumped out of Turner Valley as fast as it would come to feed the war effort, and important additions were made to the refinery at Regina. Some equipment with a complicated name - a non-selective high pressure catalytic polymerization unit - was installed to make better gasoline and more of it. Another addition was an absorption and reforming unit, which also added to yield and quality.

Towards the end of the war, production at Turner Valley began to decline. An extensive search for crude began, and some of it was brought all the way from Texas to Regina - 2,500 miles.

Then in 1947 came Leduc. Soon oil began to flow from the huge Alberta fields through the Interprovincial pipe line to Regina. Alberta oil meant plentiful and cheaper oil.

The result was an increase in the use of oil products which in turn brought about the removal of the $7 million expansion at the refinery. It was already the biggest refinery in the province, and now, with a capacity of 23,500 barrels a day, it is more than ever ready to meet the expanding needs of the prairie farmer and industrialist.

The new equipment includes some of the most modern in Canada. Besides the new cat cracker (capacity 8,100 barrels a day) and the new vacuum distillation unit (capacity 9,150 barrels a day), a new gas recovery unit has been added; also an automatic control room for the cat cracker, water cooling towers, and a technical building. The maintenance shops have been expanded, and new treating plants have been added. The refinery's own electrical power distribution stations have been enlarged and a new medical centre has been built.

In addition to motor gasoline, Regina will produce jet fuels, diesel oils, fuel oils and asphalt.

Many of these products have been specially processed for prairie use. In the early days the problem was to get oils and grease to flow freely in the extremely low temperatures. Imperial's research men soon solved this, They developed a multi-purpose grease which would not harden at 40 degrees below.

**Special Prarie Oil Uses**:

Also special grades of gasoline have been developed to work efficiently in Saskatchewan's hot dry summer months. Imperial's research laboratories were set up in Barmia in 1932, and since then they have worked on the particular problems of the prairies whenever they arise. One of these problems, still to be solved, is a method of treating the heavily sulphured fields of Lloydminster, Colville, Wapella, Estevan, Canteen, and Eastend. Special treatment is needed before they can be refined and refineries equipped to process light low-sulphur crude cannot economically process heavy crude.

Smiley oil field came after years of exploration by Imperial geologists. As far back as 1919, Imperial parties mapped vast areas of the province for the first time, but they were hampered in their search by the lack of accurate map readings. To discover rock layers embedded deep in Saskatchewan's soil, geologists climbed down farmers' wells and open mines.

Many of their finds proved without success, but the Smiley discovery has created new interest. Another new discovery near Priddish in southeastern Saskatchewan has increased this enthusiasm.

Although oil is becoming of increasing importance in Saskatchewan, it has never recalled the importance of farming. The bantam life of the province still depends on the state of agriculture. Storekeepers keep a close check on wheat prices, and restaurant owners, hotel keepers, real estate men, and other businessmen who serve the farmer anxiously await the results of the year's crop.

Saskatchewan has 62 million acres of farmland, 38 million of them under cultivation. From this acreage are produced over half of Canada's winter grains, and well over half of her wheat.

Other industries are growing fast. Over half the province is enclosed with trees, and forest industries produce over $10 million a year. Coal is strip-mined in the southeastern part of the province. Metallic minerals are abundant in abundance in the north. One of Canada's greatest mining discoveries was made at Lakes Athabasca, where the big uranium ore body was uncovered. Oil is shipped to Edmonton City by rail and barge to a lake terminal built by Imperial at nearby Bashford. Millions of gallons of oil products are moved about the province at summer, of course, to tide the output over the frozen winter months.

**Pioneering Spirit Still Lives**

Saskatchewan's picture today is one of prospering agriculture, growing industry, and oils and minerals being gathered from the earth by hardy and thrifty people. It is not a static picture. The pioneering spirit is not dead.

Its expression has changed. It has become less adventurous; more laborious. Even at this moment settlers are making new homes, breaking new ground, in places with only the barest River, Smokey Train, and Star Blanket. Other pioneers are searching for new areas for industry, looking for oil, and experiencing all the summer's heat.

Next year is Saskatchewan's golden jubilee. Already out of the vast prairies aoints a quiet confidence. It is in the faces of the children, the hands of the farmer, the activity of the oilmen, and in the eyes of the old-time pioneers like James Graciek as they see what they have helped to create... from a pile of buffalo bones, a great city... from a great empty plain, the world's largest wheatfield...

-Michael Sandt

*Emphasis working on the social rather than special training. Instructors are using the detailed scale model during lectures.*

**August 1954**

**Imperial Oil Review**
The Loon's Necklace

a legend
a movie
and now a ballet

Masks were copied from originals made by B.C. Indians. The wolves' "hands" look as animal-like as their masks.

They leap. They crouch. They glide and mime. They wear brown, grotesque masks streaked with red, white and black. They are dancers interpreting an ancient tale long familiar to the western Indians of Canada—why the loon wears a necklace.

A few years ago the legend was made into the movie, The Loon's Necklace. Now the story is a ballet created by Willy Blok Hanson, a Javanese-born dancer-chorographer.

Mrs. Hanson's inspiration came from the film, sponsored by Imperial Oil, has so far been seen by almost 1½ million Canadians. It was named 1948 Canadian Film of the Year and received international acclaim at Edinburgh, Cleveland, Venice, New York and Brussels for its conception, originality and camera work.

Mrs. Hanson saw the film last summer and it appealed to her immediately because she felt there was a deep meaning in the simple Indian tale. She decided to act on the suggestion of Douglas Leechman of the National Museum of Canada that "The Necklace" could be adapted to dance form. It was Mr. Leechman who suggested that the loon legend would make an outstanding movie.

Willy herself did the choreography, Calvin Jackson, a Toronto pianist and arranger heard regularly on radio and TV, composed the music and Joan Townsend, an artist and a pupil of Mrs. Hanson's made...
papier-mâché copies of the 100-year-old Indian masks held by the National Museum. The work was first performed in Toronto last November.

The tale that intrigued Willy Hanson is about an old blind medicine man called Kelora. Though miserably poor, he would only sit and bask in the sun despite the constant scoldings of his wife. He never took offense and was around only by the loom’s cry.

But in a year of great famine when hungry wolves attacked the village, Kelora, blind and afraid, went out to fight them. His magic bow and arrows struck fatal blows and he overcame the wolves.

During the battle Kelora was guided by the voice of the loom which, according to the legend, was his father. The following spring he decided to seek out the loom and ask for his sight. A day’s wandering brought him to a lake and the loom. Kelora’s appeal was granted and after four plunges into the purifying lake water, he could see. In thanks, he gave the loom the dearest of his treasures — his magic collar of shellfish. As it slipped around the loom’s neck, some shells fell on its back to form the black and white pattern looms wear today.

Each position and gesture of the dancers has a meaning.

Indian folklore is colorful. Through the film and the ballet of The Loon’s Necklace, one of the famous legends is perpetuated.

The Loon’s Necklace is one of several dance sketches created by Willy Blok Hanson in her three years in Canada. Originally from Java, she was educated at the Haarlem-Lasemingsch school in Vienna but fled to Paris when Hitler marched into Austria. After a short time with the famous Hindu dancing company of Ram Gopal she returned home to her worried family in Java only to spend the next five years in Japanese prison camps.

After the war she met and married her Australian husband, Linden Hanson, who was running a plantation. After Java broke away from Holland the Hansons moved to Singapore but they didn’t like living in such a communist-threatened area. Canada as a free, young and growing country seemed the best place for a fresh start. Today Willy is happily at work at her “Fine Art of Movement Academy” in Toronto and is well-known for appearances on television and at ballet festivals.

While in internment, Willy’s thoughts on dancing crystallized. At one time she was confined to a small room for 65 consecutive days in complete darkness with practically no food. Accused of being a spy, she was in fear of execution by the firing squad. She prayed for another chance to show her talents in a way that would inspire others. After investigating her case a Japanese commandant sympathetic to her ideals spared her.

Since then all her dance creations include a moral. Her interpretation of Romeo and Juliet admonishes parents to teach their children to love one another, not hate. And The Idiot adapted from Dostoyevsky’s novel, instructs that “Passion is good but not enough; one must actively fight evil or be destroyed”.

Mrs. Hanson feels that in The Loon’s Necklace the loon symbolizes higher aspirations towards which man should strive. “In primitive societies,” Willy says, “birds always signify a higher life. In the dance I have tried to tell the story of the cultural progress in Canada starting with art as a main concept and leading up to individualism. I began with the traditional movement of all primitives — bent knees, bent arms, all doing the same — and at the end when Kelora has risen to a higher plane, he stands straight. The music odyssey this and finally everything emerges into the free”.

As a dance The Loon’s Necklace has made its debut and this coming winter it will appear on Canadian TV. It is also to be presented in the United States. Through the dances and the film many people are becoming familiar with a colorful legend that is a part of Canada’s cultural heritage.

Jean Donard
Imperial's "Flying Scot"

Bob Thomson is one of Imperial's railway service engineers who help to keep trains in Canada running smoothly.

Bob's work takes him wherever railroads run in western Canada. A lot of his time is spent with the engineers.

One night a few years ago, near Lac La Biche, Alta., when no stars shone in the sky and the moon was lazing along behind some heavy clouds, Bob Thomson started down from the cab of a locomotive. He reached the last step and was about to swing to the ground. Then he stopped suddenly and climbed back. If he hadn't, this account of his career would be very short. For, unbeknownst to him, the train had stopped on a trestle over a 100-foot deep ravine.

That incident happens to be the only hair-raising one in more than two score years' association with railroads. Bob has been in love with the big black monsters of the rails ever since, as a little lad in Scotland, he was lifted up into the cab of his grandfather's engine on the Caledonian Railway—a memorable occasion indeed, for grandfather John Rait was engine driver to Queen Victoria.

It was probably something much deeper than coincidence that caused Bob to be given the initials R.R., but looking at them today that christening would seem to have been prophetic. For Robert Rait Thomson, as practically every railwayman in western Canada knows, is one of Imperial's railway service engineers. What's that? Bob says it's a little hard to explain. The best way to find out is to make a run with him and observe what he does. Which we did.

Now we were going 'round the bend doin' what seems to be 90 miles an hour (it's not really, for railway regulations won't allow it) and there was Bob in striped engineer's cap, snappy white coveralls (oil-fired engines are so nice and clean) standing at an index finger covered with lubricating oil. At first it looked as if he was going to lick the oil off—the love of some men for their job knows no bounds—but he didn't. First he sniffed the oil, then rubbed it slowly between thumb and forefinger, nodded approvingly and wiped the stuff off on a cloth. Taking a book from his pocket he began jotting down a few notes which, from an over-the-shoulder viewpoint, looked like Gaelic.

TESTING A NEW OIL

"This is a new lubricating oil we are trying out," Bob explained. "At the next stop we'll go down and look at the piston rods to see how it's doing. So far, the oil isn't breaking down and it is spreading evenly and giving just a nice, thin coating."

So we hopped down at the next stop. Keeping a wary eye on the conductor to make sure we wouldn't be left at Bone Gutch station, we looked at the piston rods and, sure enough, there was a nice, thin, even coating of clean, clean oil. Or so it seemed.

But Bob shook his head a bit doubtfully. "I'm not too sure of the stability, yet," he told the engineer. "Of course, we've been on an uphill pull but just the same, I want to be positive the oil is standing up consistently. This is the very type of run for which it has been produced."

The engineer didn't seem too unhappy about the
During his last run, Bob keeps a record of his findings. These are carefully studied in the research laboratories.

The performance of the oil and the decision if Thomson wanted to be fussy was his business. We climbed back up into the cab of the engine, once more to be entranced by the fact that no one keeps pulling a cord to make the bell ring. It just goes automatically as big can or gear or half wheel or something keeps going around and makes it ring.

Later, Bob bellowed above the roar of the engine that any oil in a satisfactory lubricant must have stability, freedom from trouble in service and maintain constant running temperatures. It was hard to understand what he was saying because he still doesn’t know there’s only one “Y” in “freedom”—he says, “freedom”. He went on to explain that his work involves tests of lube oils, greases and fuels and that if a new product on test doesn’t stand up, “I report back that it is unreliable.”

Then he said that on a run such as the one we were making, there were leads to each bearing, with thermocouple immersions within the bearing and the leads were coupled to the switchboard in the cab and to the Brown electric pyrometer which registered the running temperatures of the bearings in degrees Fahrenheit. Then just the engine whistled, which saved us the trouble of trying to untangle the explanation. The important point is that Bob is a specialist in oil performance on trains and his work helps guarantee efficient, safe and smooth journeys.

Bob began to tell us that if he were taking passenger cars on the train stops Bob sees how the oil is standing up. One test is to rub it slowly between thumb and forefinger.
LIM, the rickshaw boy of the Orient, has long been considered the world’s cheapest transportation service but he would find pretty stiff competition in Canada. Listen to the offer his Canadian competitor, the gasoline gallon, is laying before the public:

"Take you 20 miles and more, sir. Take your wife, your cousins and your aunties along too, sir. Take lots of baggage. Move heavy machines. I do all this work for you . . . and you work just 17 minutes to pay me."

That’s the proposition the gasoline pump in Canada offers every time it clocks up the sale of one gallon of gasoline.

Back in 1939 it took the average Canadian wage earner about 33 minutes to earn enough to pay for a gallon of gasoline. In 1946 it took 29 minutes’ work; now it’s only 17 minutes.

Gasoline, in terms of average earnings, is far cheaper today than it was 10 years ago, or at the depths of the depression, or at any time during the prosperous Twenties.

The rise in the earnings of the average Canadian has outpaced the increase in the price of gasoline.

It’s true, of course, that gasoline prices, like those of other commodities, have gone up in recent years. But the increases in gasoline prices have been much less than those for the average commodity.

Why has gasoline remained cheap? The basic reason is competition throughout the industry. This competition has brought about a constant search for new sources of crude; pipe lines stretching across more than half Canada to carry crude and products economically; great modern refineries to process large volumes of crude oil and more efficient marketing methods.

When the automobile began to come into its own back in 1920, the oil industry didn’t have as efficient tools as it has now, and gasoline was selling at around 50 cents a gallon in leading cities across Canada. That was before the days of provincial road taxes. Today provincial governments take from nine to 15 cents (depending on where you live) of the price you pay at the pump—but still the retail price is lower than it was in 1920.

Not only that, but each gallon of gasoline is working harder. Two gallons of today’s gasoline will do the work of three gallons of 1920 quality. Automobilies have been getting heavier and more powerful, yet they still go as far on a gallon, and the reason is that engines have improved and the gasoline is better. Research and new refining techniques and equipment continue to improve octane ratings, permitting greater engine efficiency and making the rickshaw boy’s outlook as a competitor seem dim indeed.

In the past decade the demand for petroleum products has almost quadrupled and more than a gallon of products must be supplied every day for every man, woman, and child in the country. Petroleum supplies 42 percent of the energy used in Canada.

Contending for a role in filling these needs are 750 companies in Canada . . . plus several hundred private firms and partnerships . . . plus thousands of privately-operated service stations and other retail and wholesale outlets. Some of the organizations are concerned with several or many phases of oil operations; some concentrate on only one phase. All of them are engaged in a competitive industry.

Crude oil producers bid against each other to secure exploration leases and drilling rights; they strive to obtain the best geological information, to drill successful wells and to make the best use of the oil they find.

Buyers of crude oil often bring alternative transportation methods, such as pipe line or ocean tanker, into competition with each other to take the oil to the market at the least cost.
It takes half as long today to earn a gallon of gasoline as it did in 1939.

Refiners spend millions on catalytic cracking equipment to obtain higher quality products and attract customer patronage. And the marketers, both wholesale and retail, constantly try to speed up and improve their distribution methods, engage in aggressive brand advertising, and compete in service and price.

It's like a thread running through the industry: competition to fill large demand by large effort which permits low unit costs.

The thread leads to the gasoline pump. Wherever you live in Canada, the price on the pump reflects these factors:

a. the wholesale price at which the dealer buys his supplies.

b. the provincial tax which varies from nine to 15 cents per gallon, depending on the province.

c. the dealer's mark-up, the amount that pays for his services and operating costs.

DEALERS ARE INDEPENDENT

All Imperial dealers are independent businessmen operating service stations which they either own or lease. The Esso dealer, in determining his mark-up, must meet competition from the other dealers in his area. The price he puts up on his pump reflects the way he sizes up his own location and circumstances.

A recent survey in Toronto, for instance, showed a difference of more than three and one-half cents between the highest and lowest price of regular grade gasoline at various locations. Esso gasoline was selling at 15 different prices in the city.

It is usual, of course, to find that different brands of gasoline are selling at the same price at the same crossroads. Some people ask why this should be so, particularly because the gasoline was made by different companies in different refineries, often in different locations which means different transportation costs were involved.

The question might equally be asked of almost any other commodity which is universally available and frequently purchased. The man who delivers eggs to your house charges the same as the man who serves your neighbor down the street. If one of them decides to cut the price, the other must match the cut, or risk losing his customers. Neither will raise the price unless it's reasonably certain his competitor won't undersell him.

Similar pricing in similar markets is often the best evidence of competition: it simply wouldn't be possible for a significant price difference to exist for long. Competition establishes a market value for gasoline in each community.

If we take the "most common" price of regular grade gasoline in seven cities across Canada (Vancouver, Edmonton, Regina, Winnipeg, Toronto, Montreal and Halifax) we get a fair picture of what the Canadian motorist is buying with his gasoline dollar. The components—taxes, dealer mark-up, wholesale price—vary from region to region, but average out like this:

Out of every dollar spent on regular grade gasoline, the motorist pays 28 cents in provincial taxes. In effect, more than 1/4 of his money doesn't go to buy energy to propel his car, but to help buy the road it runs on.

Then he pays 17.5 cents out of each dollar to the dealer. Here he's buying the facilities that make gasoline available where he needs it—an indispensable factor of everyday life. He's paying for the wages of the attendant who fills his tank, checks his tires and battery, wipes his windshield.

This leaves 54.5 cents out of the gasoline dollar, as the wholesale price, which includes the federal government's sales tax and pays for finding the crude oil burned under a mile or more of rock, bringing it to the surface, transporting it by pipe or ship thousands of miles, refining it and making gasoline reliably available across the country.

Since 1939 the average retail gasoline price in Vancouver, Toronto, Montreal and Halifax has risen by 55.8 percent. In the three capital cities on the prairies where the post-war oil discoveries have launched a great new industry and provided a nearly supply of crude, the average retail price has increased only by 29.8 percent. If we strike a country-wide average using these seven major centres, we find that the retail price of gasoline across Canada has increased by 44 percent.

Yes, gasoline costs more than it did, but this is also the day of the 10 cent cup of coffee which cost five cents before the war. If gasoline had followed this example you would now pay an average of 55 cents a gallon instead of an average of 40.3 cents.

LARGE VOLUME, SMALL PROFIT

There is one good reason why the price of gasoline remains comparatively low. The oil industry depends on a very large sales volume and a very small profit per gallon. Often an oil company's margins are so small that a fraction of a cent per gallon can mean the difference between success and failure. A basic principle of the industry is a very large throughput—usually measured in terms of millions of gallons—and a very small margin of profit. It is this principle which has meant that the price of gasoline is within the reach of people everywhere.

Over the years the wholesale price has taken a diminishing portion of the gasoline dollar. New techniques brought about by research, large volume efficiency and competition have improved producing, refining, transporting and marketing methods. The result: the wholesale price of gasoline is only half what it was in 1929.
First, the crude oil price. Canada gets crude from two sources: from domestic production, mainly the fields in western Canada, and from imports, the oil brought in from South America, the U.S. and elsewhere. Up to 1947, Canada’s domestic production accounted for less than 10 percent of the crude she used; the rest was imported. Even now, despite Leduc and all the other western discoveries, our imports are larger than our own production, though with the current increase in Canadian production it may equal imports by the end of this year.

The price of crude oil in Canada—whether it comes from Canadian or foreign fields—is affected by its basic value in world markets. Petroleum is no different in this respect from any other commodity which is, or can be, traded throughout the world. Because oil is used all over the world, but found in only a few places, often far from large markets, oil men think in terms of factors affecting the world oil picture—such as tanker rates or the development of new supply areas. Such things affect the price which the producer is able to get for his crude and the price the refiner—who might be halfway across the world from the producing field—is prepared to pay.

The areas of oil production compete against one another. For instance, crude from South America competes with oil from the Middle East, and from other areas in supplying the markets of the world. This competition has the effect of establishing prices for different fields around the world and for crudes of different properties.

It’s obvious that the areas in Canada still depend on imported crude (Quebec and the Atlantic provinces) are directly affected by this competition between the oil producing areas. The crude is purchased at the lowest price offered by the foreign oil producers. The sellers of crude will supply Canada only if they can receive payment that will at least equal the offers from other areas that need the oil.

The price that foreign producers get for their crude also affects the area served by Canada’s own western fields. This area now extends from the Ottawa Valley to the Pacific Ocean. As more and more oil was found and pipe lines were built, Canadian crude began progressively to replace imported crude at Regina, then at Winnipeg, and then at Sarnia. Canadian crude could be sold only if it was offered at prices equal to, or lower than, those at which oil could be bought from other sources.

Ontario still is the farthest point reached by Alberta crude oil. At refineries in Sarnia, western Canadian crude must meet the price at which oil can be brought in from Illinois. If the Canadian crude is offered at a higher price the Ontario market will be lost. Western crude cannot be sold for less than Illinois crude without penalizing the Canadian producer. This brings a balance of price at Sarnia.

Oil men call this a “key” or “fringe” market. Because it has a large demand for crude and is far from the source of supply in terms of transport cost, it becomes a highly competitive area and the key to prices. It is on the fringe of supply, usually the most distant major market that can be served economically by an oil field.

The price at the key market, less the cost of transporting the oil there, determines the price the producer receives in the field. In other words, the price at which western crude can be sold at Sarnia, less the cost of delivering it there—some 1,800 miles—determines the price of crude at the well in Alberta.

Refineries at locations between an oil field and the key market buy their oil at the wellhead price plus the cost of transportation to the refinery. The way this works in Canada is that competition at Sarnia, the key market, determines the price at the well in the Alberta fields; then the Alberta field plus the cost of transporting the crude to Regina determines the cost of crude in Regina; the field price plus the cost of transporting the oil the greater distance to Winnipeg determines the Winnipeg price and so on.

Each time the market for Alberta crude was extended eastward after the Leduc discovery by Imperial in 1947, the refinery producer absorbed additional transport costs. The reason was that he was matching U.S. prices farther from home base. The price of crude had to go down at the wellhead as new fringe areas were reached and this brought about price reductions on the prairies to the benefit of western consumers.

This is what happens when a new oil supply is pushed farther and farther into new markets. As a new key market is reached, transport costs tend to increase and wellhead prices to be reduced.

Logically, the cheapest gasoline in Canada is at Edmonton, close to the oil fields. But the wholesale price at Halifax isn’t very much more than it is in Alberta. This points up an oil man’s axiom, that the cheapest form of transportation is by water. Halifax gets its crude by tanker on a year-round basis and this, in effect, brings the city close to foreign oil fields.

Next to water transport, pipe line delivery crude most economically, and the building of the Interprovincial and Trans Mountain lines east and west
Salute to a Great Canadian

THOMAS Maysie “Pat” Reid, DFM, SB, famed bush pilot and Imperial Oil’s aviation sales manager, and his wife Margery were killed in the crash of an airplane over Moose Jaw, on April 8.

The name Pat Reid is synonymous with Canadian aviation. He was continuously associated with the industry for more than 30 years, known and respected wherever flying men gathered.

Broad-shouldered, thickset, with grey-spotted black hair, twinkling eyes and a slow, warm grin, he contributed as much as any man to the over-all development of Canadian aviation.

As a pilot, he was without fear. He twice lived to read his own obituary, when on two occasions the world gave him up for lost. In his career he probably flew over more Canadian territory and made more notable flights than any of his contemporaries. He was the first man to fly the Northwest Passage of the air, and one of the first to recognize that the Arctic was no longer a safe barrier against attack from the north.

Pat died within a few days of the 25th anniversary of the Northwest Passage flight, in which he flew an exploration party from Fort Churchill to Chesterfield Inlet, Bucker Lake and Coppermine River on the Arctic coast. From the Arctic he returned to his Sioux Lookout, Ont., base touching down on Great Bear Lake, Fort Norman, the Mackenzie River, Great Slave and Athabasca lakes. The flight took six months and covered more than 30,000 miles. Pat proved wrong never before seen by man. All the time, he sketched what he saw and provided Canadian map-makers with some of their earliest knowledge of the uncharted northland.

Pat took a great personal interest in the people he met, particularly young Canadian fliers, and it was through Pat that many of them received their opportunities. He assisted many fledgling airline companies to get established. Some have become integrated in bigger companies; others are still serving communities beyond the reach of rail or road.

Though he lived in Canada for 30 years, Pat never lost his rich Irish brogue. He was born in Ballyroberty, Northern Ireland. He served in the Royal Naval Air Service and Royal Air Force in World War I, flying in the Dardanelles, Bolsheviks and France. He was awarded the Distinguished Flying Medal.

After the war he flew European air routes, including the first cross-channel passenger service from London to Paris. He came to Canada in 1924 and for three years flew for the Ontario Provincial Air Service. While at Sault Ste. Marie with the OPAS he met and married his wife Margery. Their only son, John, followed in his father’s footsteps and is presently serving with an RCAP jet squadron.

The years that followed his marriage in which he was a pilot for a mineral exploration firm, were the years that made Pat Reid’s name a household word on both sides of the Atlantic. He made some of the most daring Arctic rescues on record.

In 1931, Pat joined Imperial as aviation sales manager. Though he knew it was a position in which he would spend less and less time at the controls of an aircraft, he saw it as an opportunity to further the cause of Canadian aviation. Pat, one of the greatest Canadian aviation pioneers, regarded Imperial as an aviation pioneer too; the first company to go into the north with the pilots. He visualized the Company, with facilities from coast to coast, as able to serve Canadian pilots wherever they might be.

During the last war, Pat organized supplies for the British Commonwealth Air Training Plan which created a vast reservoir of wartime pilots. For this he was awarded in 1944 the coveted McKee trophy for outstanding services to Canadian aviation. It was awarded for the job years 1942 and 1943.

Pat Reid cast the shadow of his wings across Canada from the Arctic to the international border. He will be remembered as a pioneer, a great pilot and a great Canadian.
Personnel News

G. L. Macpherson
Elected Director

IN the 32 years that George L. Macpherson has been with Imperial Oil, he has risen from draftsman in the engineering division of the manufacturing department at Sarnia to his present position as the newest member of the board of directors. He was elected a director at the Company's annual general meeting in April to fill the vacancy created when board membership was increased from nine to 10.

Mr. Macpherson joined Imperial in 1922 and began work on designs for Calgary refinery. He was sent to the Massachusetts Institute of Technology in 1920 to study refinery design and on his return worked on the development of refinery equipment. He was successively assistant chief engineer, chief engineer and manager of the engineering and development division. During World War II he helped build and set in operation the Polymer Corporation plant at Sarnia. He became general manager of the manufacturing department in 1949 and held this position until August 1.

Mr. Macpherson is a native of Marldale, Ont., and a veteran of World War I. He is a graduate of University of Toronto in mechanical engineering and a past president of the Association of Professional Engineers of Ontario. He was first chairman of the Sarnia branch of the Engineering Institute of Canada.

Manufacturing Appointments

Dwight S. Simmons succeeds G. L. Macpherson as general manager of the manufacturing department. He has been with that department since 1932 when he started as a draftsman in the engineering division at Sarnia. Mr. Simmons' experience has been varied. He collaborated in the design of many major refinery construction projects including equipment to produce synthetic rubber. In 1943 he was loaned to St. Clair Processing Corp., which was formed to make this essential commodity. Later he was chairman of Imperial's manufacturing technical committee and manager of the engineering and development division. While in this position he was in charge of the design and construction of new refineries at Edmonton and Winnipeg. He spent a year in Montreal as general superintendent of the refinery. In 1952 he was appointed assistant general manager of the manufacturing department in charge of refinery planning and engineering.

J. A. Cogan takes over Mr. Simmons' duties as assistant general manager of the manufacturing department. In this position he is responsible for all refinery planning and engineering. J. Dean Bradley, continues his responsibilities as assistant general manager in charge of refinery operations. Mr. Cogan is a graduate of Colorado College and has a master's degree from the Massachusetts Institute of Technology. On graduation in 1932 from M.I.T., he joined Standard Oil Co. of Louisiana as a process engineer. Two years later he transferred to Standard Oil Co. (N.J.) in New York to work with their co-ordination manufacturing group. This later became part of the co-ordination and economics department. Mr. Cogan became assistant manager of this department in 1945, and two years later, manager. During the war he worked for the U.S. government on petroleum administration.

Marketing Department Changes

Henry F. Stevenson, general operations manager of the marketing department for the past two years, is now handling special assignments for that department. A graduate in architecture from the University of Manitoba, Mr. Stevenson joined Imperial as an architect in 1938. During the last war he worked with the special construct division of the Company constructing U.S. Army Air Force installations on the Northwest Staging Route, a series of airfields through Canada to Alaska. When these were completed he supervised construction of Imperial's bulk storage and aircraft refuelling installations at Botwood and Gander airfields in Newfoundland. Since the war Mr. Stevenson has held several positions in the marketing department including that of manager of the construction and maintenance division and more recently operations co-ordinator.

Douglas H. Cooper has succeeded Harry Stevenson as general operations manager of the marketing department. A graduate of McGill University, he joined the Company in 1936 as a statistical clerk in Montreal. He transferred to Toronto in 1939 and has held various positions in the marketing depart-

ment, including co-ordinator of employee relations. For a time he was co-ordinator of management development for the Company. In 1950 he became assistant to the general manager of marketing and a year later manager of the Saskatchewan division. During the last war, Mr. Cooper served with the Royal Canadian Artillery.

L. W. "Lee" White has succeeded D. J. "Scotty" Avison as manager of the Alberta marketing division. Mr. Avison retired under the Company's annuity plan after 42 years service. Most of Mr. White's 34 years with the Company have been spent in western marketing operations. An Englishman by birth, his first job was as assistant curator at Winnipeg. By 1941 he was district manager. Four years later he became Alberta sales manager in Edmonton and, in the spring of 1950, assistant manager of the division. That fall he was transferred to Toronto as assistant manager of the Ontario division and for the past year he has been assistant to the general manager of marketing at Imperial's executive offices in Toronto.

R. D. "Bobby" Murray replaced Doug Cooper in Regina as manager of the Saskatchewan marketing division. A graduate in arts and law from McGill University, Mr. Murray has been with the Company since 1928. Until he joined the army in 1942, he was in accounting and personnel work in Montreal. He saw action both in Europe and the Pacific during the war. After demobilization in 1946, he was appointed legal assistant to the manager of the Quebec marketing division and in 1947 came to Toronto as assistant secretary of the Company. In 1952 he became assistant to the general manager of marketing and last year returned to Montreal as assistant manager of the Quebec division. Mr. Murray is a former member of Canada's Davis Cup team.

W. Gordon Brocken has been appointed aviation sales manager to succeed T. M. "Pat" Field who was killed in an air crash over Moose Jaw last April. A native of Saskatoon, Mr. Brocken is the son of John Brocken, ex-premier of Manitoba and former national leader of the Progressive-Conservative party. Mr. Brocken joined Imperial in 1939 just after World War II started and the next year joined the RCAF. He served overseas and was one of the first to make a non-stop 30-hour flight from Ceylon to Australia, a distance of 3,000 miles. He rejoined Imperial's aviation sales group at Winnipeg in 1947 and four years later was appointed supervisor of aviation sales for Ontario. In 1952 he went to Ottawa as district operations supervisor for marketing.
Producing Appointments

Harold W. Stone men has been appointed co-ordinator of exploration and production operations in Saskatchewan and Manitoba. Mr. Stone men, who has a B.Sc. in geology from Durney College, Spring field, Mo., in 1957, joined The Carter Oil Co. which at one time conducted geophysical work for Imperial in western Canada. In 1940 he came to Canada as a geophysical interpreter for Carter. Later he became field supervisor of Carter's Canadian operations, and in 1948 joined Imperial's western producing division as assistant division geophysicist. He was appointed division geophysicist in 1949, and in 1961 became district exploration manager at Regina.

Douglas B. Leyer, former division geologist at Calgary, succeeds Mr. Stone men as manager of the Regina exploration district. Born in Winnipeg, Mr. Leyer was educated in Banff, Alta. and graduated in geology from the University of Alberta in 1928. After a year of post-graduate study he worked as a geologist for six years before joining Imperial as a willsite geologist. In 1947 he joined the subsurface department at Calgary and moved into research two years later. He became division geologist in 1951.

W. A. Roliff Honored

W. A. "Bill" Roliff, exploration and production manager in eastern Canada since 1946, was named a Fellow of the Royal Society of Canada at the Society's meeting in Winnipeg in July. A geology graduate of University of London, England, Mr. Roliff joined the Company in 1929. He has been concerned with oil activities all over Canada but has given special attention to developments and prospects in eastern Canada. Mr. Roliff has prepared and published many significant papers on petroleum geology in Canada. He is secretary-treasurer of the Geological Association of Canada, a member of the advisory committee on mines, minerals and metallurgy of Ontario Research Foundation and a director of Natural Gas and Petroleum Association of Canada.

Trojan B. Andrews, caretaker at Sarnia's topping and coking unit, was born in Kamensky, Russia, and came to this country in 1911. He became a Canadian citizen in 1919. Mr. Andrews' first job with Imperial was as a still cleaner at Sarnia refinery removing coke from hot stills. When those batch stills were dismantled in 1925, he took over his present duties. One of his two sons, John, is a first assistant at the refinery asphalt plant.

Robert J. Cameron, a native of New Westminster, B.C., joined Imperial in 1914 as an electrician at Iocle refinery. The following year he helped install the electrical system at Regina refinery. At Iocle he has combined the duties of fire marshal and safety supervisor with his position of electrician foreman. Mr. Cameron has actively participated in the B.C. Civil Defense program and has been assistant provincial fire marshal since 1927. Golf and baseball are his favorite sporting interests. He was manager of the Iocle baseball team when they won the B.C. championship and has been president and local chairman of his golf club.

Charles Cuscheri, a native of Malta, was a dock worker at Valetta before coming to Canada in 1918. That December he joined Sarnia refinery's grease plant in the section where specialty oils are made. Except for a short period in plant protection and as fireman on the coke stills, his service has been with the grease plant. He is presently caretaker. A veteran of World War I, Mr. Cuscheri was with the Lambton Regiment for three years and was overseas until his discharge in 1919.

Edward T. Fox has completed 40 years' service at Sarnia refinery. Born in London, England, he came to Canada with his family at the age of 11. In 1913 he started to work in the boiler room of the refinery. He spent 14 years in the inspection laboratory and then worked in bulk shipping, plant protection, and gauging. He is now with the unit which treats and recovers oil from the waste material of the refinery. In World War I Mr. Fox served overseas with the 122nd battalion R.C.A. After discharge he entered the Reserve and was active in the Lambton Regiment until it was disbanded in 1936.

Peter Ghab, a B.A. in English from the University of Manitoba in 1964, was named a Fellow of the Royal Society of Canada at the Society's meeting in Winnipeg in July. Mr. Ghab, a native of Stratford, Ont., moved to Sarnia at the age of five and was educated there. Before joining Imperial in 1930 he worked in his father's grocery store and later with the CNR. His first job with Imperial was as an office boy in the treasurer's department. He left in January, 1917, to join the armed forces. On discharge he went to the shipping department where he is presently account- ant. Mr. Gowan spends his spare time either on the golf links or at the curling rink.

William H. Kent, a native of Stratford, came to Canada in 1912 as a journeyman shoemaker. Early in 1914 he took a job in the acid works department of Sarnia refinery but soon moved to the reducing stills in the paraffin department. For the next 20 years he worked around these and other stills. In 1934 he transferred to the chemical control group and later helped to establish a similar group at Haliti refinery. It was from the chemical control group that the operations analysis department developed. Since 1956 he has been a foreman in No. 1 plant.

Arthur Lever, who has spent 41 years with Imperial, started work in the cooper shop of Sarnia refinery. After four years he transferred to, and has remained with the electrical shop. He is now a group leader. Originally from Manchester, England, Mr. Lever came to Canada in 1904 and was educated at Watford and Sarnia. He used to be active in many sports and was noted for his pitching in the city softball league. Robert Lever, one of his two sons, is a rigger at Sarnia refinery.

John Percival, a native of Sarnia, joined the refinery there in 1910. His first job was in the cooper shop where wooden staves and hoops were fashioned by hand into barrels. When steel barrels replaced wooden barrels, Mr. Percival had to give up his trade of hand-coopering. During the war years he was assigned to plant protection. He returned to the barrel house in 1946. Since joining Imperial, Mr. Percival has left his job at the refinery twice—to serve in the Canadian army in World War I and later to live in California for a couple of years. His son John is in the pipefitting department of the refinery.
We Flew the Northern Airlift

A new breed of pioneers, the oil seekers, are opening up Alberta's untracked muskeg with airstrips bulldozed out of the bush.

Below us we could see a long, narrow landing strip, bulldozed out of the virgin bush. The thin slash of white to the immensity of the surrounding green stood out like the blaze on a horse's face.

As we came in to land, our wheels seemed to brush the tips of the poplar and evergreen trees below. Then we hit the dirt strip and taxied to a stop. We felt small and insignificant sitting in the craft. The landing strip didn't seem so big, now that we were on it, and the bush—there's always the bush—seemed to press in on us.

An hour and 15 minutes earlier we had been in one of civilization's northernmost outposts in Alberta—Peace River. It was at Peace River airfield that we had climbed aboard a twin-engined plane and headed for the vast, and—for the most part—untracked northern Alberta bush.

Swiftly we passed over 150 miles of farmlands, muskeg, rivers and forested mountain slopes to the isolated camp in the Peace River district of northern Alberta, not far from the B.C. and Northwest Territories border, on the upper reaches of the Hay river.

This plane-ferrying service to the remote oil exploration camps in the north is one of the boldest and most spectacular transportation developments in an area where men have to be bold and spectacular to survive.

It is opening up one of Canada's last frontiers and has quickened the search for oil. Areas which have never before felt the foot of man are now open for year-round exploration. Throughout the year, planes shuttle men and equipment into the bush, cutting land journeys of weeks and months into a matter of hours.

The strip we landed on was 3,000 feet long and 200 feet wide, built at a cost of some $6,000. It was one of seven airstrips Imperial built about 30 miles apart in the Peace River area. One of them, a clay strip 6,000 feet long and 600 feet wide, can handle the huge seven-ton Bristol freighter.

As the first step in building the airstrip, aerial photographs were studied. With the photographs as a guide, Imperial's geological department at Peace River picked each site—usually one where poplar trees are thickest because they indicated solid ground for year-round landing. In this country, in the summer, the ugly, treacherous muskeg even pulls the tracks off the nimble wheeled, and has been known to swallow bulldozers whole.

The site picked, bulldozers were sent into action. To get to the site on which we landed, the bulldozers had to battle their way 80 miles through the bush from the Mackenzie Highway which links Grimshaw, Alta., with Hay River in the Northwest Territories.

Because the muskeg is impenetrable during the summer the bulldozers hacked their way through the bush in the dead of winter, when the ground is frozen hard. They worked in temperatures that plummeted to 60° below zero. Frosted motors they accepted as normal hazards.

Throughout the northwest similar strips have been built by Imperial and other oil companies. In the unceasing search for oil, planes no longer have to rely entirely on small, rock-atrawn lakes and rivers as landing places. Instead bush planes, including Imperial's own De Haviland Beaver and its big brother, the Otter, land on the strips, using wheels in summer and skis in winter.

Imperial's largest strip is at Steen River, Alta., not far from the N.W.T. border. More than a hundred exploration trailers operate out of Steen River. In B.C., Imperial operates an airstrip at Beatton River near the Alaska Highway, a few miles north of Fort St. John, and another in the Island River area of the N.W.T. And still others are being built so that oil workers can hedgehog over the vast tracks of virgin wilderness to new prospects, avoiding long, arduous and expensive journeys by truck vehicles.

Despite this network of landing fields, however, the intrepid little truck vehicles, the weasels—used by the U.S. army in building the Alaska Highway—are still doing yeoman service in the bush country. As we came to a stop on the airstrip we could see one of them painted red and grey and pulling a trailer, bolting forward on its cat tracks toward the plane to pick us up and take on supplies. It took us down a spongy muskeg road through avenues of slim poplars in a half-hour journey to the base camp.

As we neared the seismic camp it looked like a tiny lost hamlet in the northern woods. Set up on the edge of another landing strip that had gone out.

Hal Fairoush fuels up one of these weasels operating from the base camp. Gasoline drums are brought in by an
in laying down their dynamite blasts to try and define the rock structures below the earth.

That summer, Sutton's crew ranged from ten to 30 miles from the base camp, setting up small "fly camps" (small, temporary tented camps) when they chose a more distant site. Most of the heavy supplies for summer had been brought in during the previous winter—40,000 gallons of gasoline, 42 tons of dynamite, 2,000 gallons of diesel fuel—and stock-piled.

The men worked 40 eight-hour days and then took two weeks off. With regular plane service from the camps to Peace River, they could fly out to Peace River town for their time off. The plane service also meant a much more pleasant time in camp, as we discovered. Cook Lloyd Nolan, a wiry, energetic man who doesn't look his 70 years, was able to place sizzling steaks and fresh fruit on the table frequently.

One time, however, his kitchen got too popular. He turned around from his frying pan to find himself staring into the jaws of a hungry black bear.

"I was cornered," Nolan said, "so I just froze to the floor". The bear ambushed off, but a few weeks later it paid a second visit. By that time Nolan felt he knew him and simply shoed him away just as if he was a visitor were nothing more than a big dog.

Besides being cook and bear chaser, Nolan was the camp barber. His hair was cut by Ed Sutton.

That night we bedded down in a top bunk of a trailer occupied by Nolan and the York brothers, Ted and Roy. Men from the other skid-houses dropped in to hear Ted play the guitar, and to swap experiences about their last leaves. Down the boardwalk others were listening to the short-wave radio in the office trailer. There were some off-beat comments because all they could get was Radio Moscow.

Next morning the 12-man crew moved off to a new fly camp. Mechanic Hail Freimuth gave his machines a final check, did a welding job on the jeep's tie rod and everyone pitched in to load food, sleeping bags, spare parts and other supplies. Then a cat train formed up with the jeep in front, one of the waggons pulling a supply trailer, one pulling the big seismograph recording machine mounted on a bombardier trailer, and another the 12-foot derrick, also on tracks.

The men rode inside the waggons and on the roofs as the August weather was warm and the black-fly season had passed. It was a 15-mile trip to the fly camp, along a bulldozed road on shallow muskeg between corridors of tall poplars.

From the roof of the waggons we could see why musking is so menacing in the northern summer. Below us the vehicle tracks were kneading the spongy surface like dough, occasionally splashing through low spots of stinking black mud.

The trip took four hours. In winter the waggons can move on the hard-packed line at ten miles an hour, but in summer it slows to about four.

The fly camp had been used earlier that year and
canned goods left there under tarpaulin. But bears had got into the supplies, stewing them all over the site and leaving teeth marks in the cans.

The party took only a few minutes to pitch tents. Safari cot—folding canvas affairs—were set up inside and the bedrolls thrown on top. Food supplies were piled into a store tent and the way was clear, before lunch, for the first seismic test.

**DRILLERS GO INTO ACTION**

Moving their drill down the road, drillers Adam Halfpint and Henry Stiller wound the 12-foot derrick from its horizontal position across the trailer to an upright position, screwed in five-foot stumps and an auger-type bit and turned on the engine. The drill started a three-inch hole at the side of the road. The "shot hole" was drilled down below the looe, weathered surface material to get a good strong start for the sound waves. "Shooter" Allan France then loaded the hole with a five-pound stick of dynamite and thrust a sharp-pronged cap in the side.

Farther down the road, William Blomer, a rugged Calgarian, had mounted a 75-pound reel of cable on his back and was beginning to unwind it from the recorder vehicle. When the cable was laid, his helper, Roy York, started "jig-hustling". That meant connecting geophones—known as "jugs"—to the cables and thrusting their spiked ends into the ground. Placed at intervals along the cable, the jugs are a kind of microphone which picks up vibrations from below after the dynamite is set off. They are so sensitive that York had to cut the grass away from them in case the wind blew a blade against one and distorted the sound.

Now, with the shot hole loaded with dynamite, the cable strung out from the recorder vehicle and geophones attached, shooter Allan France exploded the charge. A column of rock and dirt showered upward. We saw that instantly. What we did not see were the shock waves racing downwards in all directions to the rock formations underground, then bounding back in thousandths of a second to the surface where the geophones picked them up and sent the signals along this cable to the seismograph.

Inside the seismograph, an intricate electronic mechanism was recording the speed of that rebound in the form of wavy lines on sensitized photographic paper. Experts interpret these lines to chart the contours of the underground rock formation. If they show the presence of a favorably-shaped rock trap, there is some chance that oil is in there. The proof comes only with full drilling operations which will not be undertaken until the seismic results from wide areas are studied carefully.

Having bumped along the bulldozed roads with the seismic crews, we could see why this highly scientific and important phase of the search for oil, a little known one, was often so arduous. And why the construction of wilderness airstrip is greeted with such enthusiasm.

**EMERGENCY LANDING**

We had first-hand experience of the time-saving airlift again that afternoon when the plane picked us up at the strip for the return trip to Peace River. Heading back over the northern woods we saw the narrow landing field suddenly swallowed up by the green immensity around it. Half an hour later we discovered that the air-ferry service is still in its pioneer stage. One of the plane's engines heated up to the danger point and we braced ourselves for a forced landing. Fortunately, we were beyond the heavily-wooded muskeg area and over the smiling farmlands that make the Peace River world-famous.

We circled low, picked a straw-brown stubble field from the green-gold and yellow quilt below us and came down in a perfect landing, braking to a stop beside a big combine.

Farmers from nearby fields came running up to find out why a twin-engined bush plane had suddenly set down in among the crops and farming equipment. We weren't sure ourselves. Then the pilot reached into the air intake funnel to discover it was blocked with dirt and debris, cutting off the cooling system. In the bumpy take-off from the seismic camp strip it had been swept from the loose dirt surface.

For us it was a frightening moment. For our pilot it was hardly an incident. These new pioneers of the frontier accept danger as their daily companion.

Earle Beattie