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Sixteen Minutes A Gallon

Competition is the essence of the oil industry. It is the driving force behind the constant search for new sources of crude oil; construction of pipe lines; building and reconstruction of large refineries and the never-ceasing quest for more efficient marketing methods. It is the force which has kept gasoline one of the cheapest of our essential commodities.

The proof of the pudding is in the eating. So, let’s see what effect competition has had on the price of gasoline over the past 18 years.

In 1939, it took the average Canadian 33 minutes to earn enough money to buy a gallon of gasoline; in 1946 it took him 29 minutes’ work. Today it takes him only 16 minutes to earn the money to buy a gallon.

In other words, gasoline, in terms of average earnings, is far cheaper today than it was a decade ago, or even before World War II. 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. Some of these gasoline price increases have been brought about by rising provincial road taxes which now range from 10 to 17 cents a gallon, depending upon the province. But even allowing for taxes, the increases in gasoline prices have been far less than those of most commodities.

What is more, the gasoline the Canadian motorist buys today is far superior to the kind he had to work twice as long for in 1939. It is superior to the gasoline he bought in 1946. In fact, today’s regular gasoline of higher quality than the premium gasoline of only five years ago.

These improved gasolines have been brought about by research and new refining techniques and, more basically, by day-to-day competition for the motorists’ dollar. Over the past decade Imperial has spent more than $60 million on refining equipment and processes to improve its gasoline. Present indications are that another $30 million will be spent over the next six years by Imperial to ensure that its gasolines meet the demands of auto engines and the consumer.
That's what oil seekers call southeast Saskatchewan. Wildcat drilling was so successful there last year that the province is now self-sufficient in oil

the “hottest” spot in Canada

by Earle Beattie

A stranger wandering out on the prairie at Cautou, near Swift Current in Saskatchewan, last June 9, would think he had stumbled on a living western legend of Paul Bunyan proportions. Under the boiling prairie sun, one thousand people were gathered around a big open fire pit. Men stood with pitchforks turning over braising half-chickens and slabs of beef and pork, while others with paddles slapped barbecue sausage from large vats on the sizzling meat.

For more than two hours the assembly of men, women and children—including some who had flown in from New York, Texas and Kansas—feasted on the succulent food, washing it down with two thousand bottles of pop. Beside them loomed two big oil tanks and a pumping station.

It was, of course, a giant barbecue party. This one celebrated the opening of a new oil pipeline pumping station at Cautou, another milestone in Saskatchewan's oil development. Hon. J. H. Broeckelbank, provincial Minister of Natural Resources, keynoted its significance when he told the crowd that henceforth oil would go hand in hand with agriculture in the economy of the wheat province.

Jim Greenblatt, widely-known editor of the Swift Current Sun, expressed the strange newness of oil in Saskatchewan when he wrote a few days later: "Five years ago the eerie prairie landscape was broken only by the songs of blackbirds, the rustle of tall grass or the occasional distant rumble of a tractor."

In those five years the oil developments have affected all Saskatchewan. Today their orbit takes in the capital city of Regina, the city of Weyburn, towns like Estevan and scores of villages and hamlets. Oil exploration parties, drilling rigs, production men and pipe-line builders range over more than half the province, from the southern plains and U.S. border to the Saskatchewan River's northern and southern forks.

In less than five years the new oil pioneers have brought Saskatchewan to self-sufficiency in crude oil. In other words, the amount of crude produced in the province equaled—for the first time last year—the amount used. Imports of light crude from Alberta were offset by exports of Saskatchewan crude to eastern Canada and the United States.

The oil search has resulted in over 100 oil and 30 gas discoveries. There are today 46 developed oil fields and 60 others with one or more wells. Where in 1940
Saskatchewan was producing but one barrel of crude a day, towards the end of last year it was producing an estimated 87,000 barrels a day from 2,056 wells with 2,401 wells capable of producing.

Expenditures by oil companies have jumped from $8 million in 1950 to $114 million in 1956. Land holdings have swelled to 47 million acres and government revenue from royalties, rentals and land sales have risen from $45,000 in 1950 to an estimated $16 million in 1956. Retraining capacity in the same period has gone up from 30,000 barrels a day to 76,300 barrels. Imperial's Regina plant accounts for 22,500 barrels. An increasing supply of natural gas—16 fields and 153 wells—has been found to serve Saskatchewan homes and industries.

The petroleum-products industry has become the largest individual industry in Saskatchewan with a gross value of $60 million annually, even forging ahead of flour-milling. For Saskatchewan, once called the "next year country," it is part of a new industrial age as auto, cement, steel pipe, pulp and paper, potash and other industries come into existence and mineral production rises rapidly. Farm products, of course, still lead the parade, valued at some $500 million.

It's a far different Saskatchewan today than that of the Thirties when a Regina Leader-Post writer, travelling in the southwest, could observe: "We passed through a landscape of almost incredible desolation—the land was as littered as ashes and scarcely a growing thing to be seen."

For oil men it's a reward for years of unsuccessful wild-casting when some $8 million was plowed into the ground with little or nothing to show for it. Lorne Leeton, now a senior drilling supervisor for Imperial at Regina, remembers working as a farm youth on the steam-draft-cable-tool rig in 1920 that drilled the company's first Saskatchewan "duster." The wooden derrick was half built at Unity west of Saskatoon when orders came to move it to a likely location on Muddy Lake, two miles south. They drilled to 2,000 feet, hit sulphurous water and gave up. Had they stayed where they were, they might have probably struck the Uinta gas field, found 30 years later.

Saskatchewan is a monument to the adage that "oil is where you find it." And even if oil is present the fact that you drill doesn't necessarily mean you find it. From 1952 to the end of last year, oil men drilled 1,941 "dusters" in Saskatchewan. The history of oil drilling in Saskatchewan is littered with stories of wildcats sunk years ago without success in areas where today oil is being found.

Vern Hunter, the friendly Regina division manager, who started as an office boy at the Calgary office in 1923 and worked on Turner Valley rigs, recalls putting in 12 to 16 hours a day in the Saskatchewan search. From 1943 to 1946 he was a tool-push on one of Imperial's two wildcats that reached the province throughout World War II in a fruitless search for oil. At Radville, near Weyburn, his rig drilled down 8,000 feet and spent a quarter of a million dollars to come close to Souris Valley oil, but not close enough. At Pennox, right in the middle of what is now the Fosterton-Success field, it scored a near miss on an area that now produces more than 200,000 barrels a month.

It was a rugged life for the drilling crews. They moved from site to site, crowded into the back of a truck. There they stretched out by an old stove to keep warm. It didn't help matters much when a hardware merchant in one town, after cheerfully taking their money for implements, boasted out: "With you fellows I guess it's easy come, easy go!"

The only oil found in Saskatchewan in those years was a discovery at Lylesmith in the mid-northwest, National Grant No. 1. There, in 1945, the white sands of an ancient sea bed 1,800 feet below the wheat yielded a heavy black crude, primarily suitable for refining into asphalt and bunker fuel.

Vern Hunter and others carried their search into Alberta. "They called me Dryhole Hunter," Vern says today with amusement. But they dropped that title fast when his drill bored into the Devonian limestone at Leduc, to strike oil and signal a new petroleum age for Canada.

With the discovery of light gravity crude at Leduc in February 1947, Imperial concentrated its resources and search for oil in Alberta. In succession it found the Redwater and Golden Spike fields and, in later years, many others.

The successes in Alberta renewed interest in all the prairie provinces, and an intensive re-evaluation of all the data obtained from Saskatchewan exploration was undertaken. With this completed, Imperial stepped up its field program in Saskatchewan and in 1949 it set up shop in four small offices above a dry-cleaning plant in Regina, moving later into a garage and showroom building. "We moved so often," says Landman Leo Laurette, "that every time I got back to Regina from the field I had to go in search of the office."

Imperial found its first Saskatchewan oil at Wapella, near the Manitoba border and the Trans-Canada highway, in October 1952. Other companies had important strikes on the west side of the province, at Fosseton and Gull Lake. The following year, drilling rigs struck oil in the southeast section of Saskatchewan at Forget and Midale.

The discovery at Forget was valuable light oil, but disappointing in that it did not reveal a major field. Its two wells now average only seven barrels a day. Saskatchewan's first substantial strike of light oil came that September, when an Imperial wildcat found a pool at Smiley, close to Coleville by the Alberta border.

Then, in April 1954, a discovery by another company at Froebisher in southeast Saskatchewan's Souris Valley signaled the start of an oil rush wildcatting now. Imperial leased the modern, five-story Derrick Building in Regina and, in the fall of 1955, changed its district office there into a division office to handle exploitation and production operations in Saskatchewan and Manitoba. It is part of the company's western producing region, headed by Vern Taylor. Vern Hunter returned to his old stamping—drilling grounds as Regina division manager. Events moved to swiftly his staff now numbers 200 and a large new wing is being added to the building.

The new Regina division's main target today is the Souris Valley which oil men describe as "the hottest discovery and development area" in western Canada. In July last year there were 59 rigs at work (development and wildcat); 19 were working for Imperial. By September there were 75, the largest number in any one area of the west. Oil wells were coming in at the rate of more than one a day. During the year 45 "indicated" oil discoveries were made—only further development work will determine if they are commercial oil finds. Eleven of the 43 finds were by Imperial.

The company's success ratio in wildcat drilling—one well for every 1.8 holes drilled—has been hailed as phenomenal. Not every successful wildcat, of course, leads to the development of a commercial field. In fact, over the long term, only one in 75 exploratory wells in western Canada has found a commercially successful oil field (one with reserves of one million barrels or more).

The Souris Valley fields lie in a rectangular-shaped region with 100 miles of the U.S.-Canadian border as its base and 50...
The man at the centre is Murray Hanna, a dark, thick-set engineer who has a way of making a quick, keen analysis of a situation, but who retains an amused smile despite the thousand and one problems that greet him. Before he joined Imperial he worked as a mining engineer in the north, then got a geology degree and a pilot’s license to help out.

Hanna was in charge of completing Imperial’s first Saskatchewan well at Wapella in October 1952. He and his staff, including the assistant superintendent, Harry Robertson, have been bringing in wells at the rate of one every two days. They must arrange for all equipment, find warehouse space, build tanks and separators, construct roads and solve transportation problems. In the course of all this, the production office take on the look of a military headquarters with a battle in full swing. Wells are covered by big township maps with colored pins marking wells, rigs drilling, locations and dry holes. Telephone connection is maintained with the field offices and Regina. Trucks are equipped with radio-telephones.

They have a big area to cover—above ground and below. Geologically, the oil fields are part of the Williston basin, named after Williston, North Dakota—a vast sedimentary bowl some 14,000 feet thick at its centre and 400 miles in diameter. Most of it underlies the Dakotas and Montana, but its northern rim slopes upwards through southern Saskatchewan to Regina and through southwestern Manitoba north of Virden. (Virden and other Manitoba fields produced four million barrels of oil in 1955.) Oil men regard it as one of the continent’s potentially great producing areas.

In this basin, the Souris Valley wells draw their oil from what geologists call the Mississippian formation—a thousand-foot-thick slab of rock in four layers that tilt up toward the surface as they extend north. Some wells are pumping oil from the top layer located near the Charles, while others draw down to the next layer, the Mission Canyon. A few produce from both layers.

West of Estevan last summer Geologist Gordon "Dutch" Holland was examining core samples at Imperial Halkirk. Saskatchewan’s tallest rig was then drilling down toward the "basement" granite at 10,000 feet. Some of Dutch’s samples had oil showing in it, a finding which was made famous by Alberta discoveries. While not in commercial quantities, the find was enough to set off newspaper headlines across the country.

Dutch had "sat on" Imperial’s discovery well at Alida when it struck oil October 27, 1954. At dawn when they opened the valve, oil rushed to the surface in eight minutes from 3,600 feet down. As it shot 60 feet out of the pipe people appeared, as if by magic, to watch it. News traveled so fast that the company got phone calls about the well before it was officially reported from the site. It was Imperial’s second find of light oil in Saskatchewan, soon to be followed by another at Nottingam, about eight miles to the east.

That month Imperial wildcats were exploring the Steelman area, some 30 miles southwest of Alida. In January 1955, the Steelman discovery well came in—not in a sudden rush like Alida, but slowly. It proved to be southeast Saskatchewan’s biggest pool of light gravity oil, soon surpassing Alida and Nottingam. In less than a year 50 wells were brought in by various companies.

From Steelman’s small railway stations last summer could be seen the tall frames of a dozen jackknife rigs and batteries of gleaming tanks and separators looking somewhat incongruous in the green fields. Some rigs were being jackknifed down, others were being moved to other roads, moving on two trucks. Big pumping machines in the fields nodded their heads like mechanical horses. Trucks unloaded crude oil into railway tank cars, a transportation system now outmoded by the 100-mile Westepipe pipe line from Midale to Cromer, Man., which links the Souris Valley fields with the Interprovincial pipe line and went into operation last July.

Sixty miles east of Estevan at Carnlough, Bill McGreavy, the Regina division’s blond, energetic drilling superintendent, had six drilling supervisors working out of skid-shack and trailer offices at Carnlough, Froebisher, Alida and Steelman. "The rigs they are responsible for have been so successful, you can’t live with them," quipped McGreavy. His job is to assign the rigs to locations and prepare a second location while they’re drilling; to assure a steady supply of pipe, cement and all that goes into the operation. The average well in this area takes from 12 to 15 days to drill.

Typical of farmers in the Souris Valley area who are directly beneficiaries of the oil developments there is Garrett Barbour. Barbour is one of the many freehold land owners who retains 320 acres of their land. Seventy percent of the mineral rights in Saskatchewan are held by the province. Imperial brought in four wells on a farm he bought seven years ago and he now receives about $100 a day in royalties. He intends to go right on farming in the same place.

Though current interest is directed on the southeast corner of the province, Saskatchewan also has fields in its western half. They’re spotted at intervals along a diagonal line that starts at Llydymoor on the Alberta border some 250 miles north of Swift Current, and ends at Dollard and Eastend, 30 miles from the U.S. border.

Swift Current, known as the Frontier City, has now placed an oil Derrick alongside the symbol of a bucking bronco on the big signboard that welcomes people into town. From January 1952, when oil first flowed from nearby Fosterton until July last year, some 308 wells and many gas wells have come in at Succos, Cankrot, Bartek and Gulf Lake fields near Swift Current. There are nine operating oil companies in the area and scores of trucking, construction, servicing and drilling firms for the city’s population, now over 10,000, has doubled since 1948.

Oil from the fields around flows to Regina through the South Saskatchewan Pipe Line where it joins the stream in the big Interprovincial line and goes to refineries in the United States. In October a 46-mile extension of the South Saskatchewan line started bringing oil from Gulf Lake, Bone Creek, Instow, and the 40 wells around Dollard in the south to a new pumping station and tanks at Cansoos.

Come hail, snow or gumbo mud, the Saskatchewan oil development keeps rolling forward. Oil men are cautious about how they think the boom will go, but they’re triggered for action in the belief that “anything can happen.” That was obvious in the fantastic land play early last year. One company discovered oil at Red Earth creek, some 130 miles northeast of Edmonton, in a formation called the “granite wash.” As it extends under Saskatchewan’s mid-northern area, it sparked a land rush by 20 companies that swept up 12 million acres on government permits, Imperial took up a million and a half acres. The whole massive land rush had been set loose by the discovery of a single well.

Today the symbol of the oil Derrick is taking its place alongside Saskatchewan’s familiar wheat sheaf. While the midprairie province produced only 20 million barrels of crude in 1956, compared with Alberta’s 142 million, the oil flow today is a torrent compared to the trickle of five years ago. And most oil men believe it will continue to grow. 

Wells on Lawrence Fleck’s land helped buy new farm equipment

Imperial Oil often builds access roads to move drilling equipment into well sites

Just a routine check of a wellhead location
ESTEVAN — oil capital of

the wheat province

by JAY GRAHAM

This Saskatchewan town is basking in new prosperity. Oil has brought bumper sales to businessmen, more jobs for young people and furrowed brows to town councillors.

"It couldn't happen to a nicer town," the oil man said, standing in his tan work clothes and hard hat beside the tall rotary drilling rig, "I've chased oil all over the west and this is one of the prettiest places I've seen."

He was talking about Estevan, the heart of the Souris Valley oil development in southeastern Saskatchewan. A green oasis of a town 127 miles southeast of Regina and eight miles from the U.S.-Canadian border, it lies at the junction of Long Creek and the Souris River. Since 1955-56 when the southeast's first oil fields were found at Midale, Frohlicher, Alida, Nottingham and other areas around Estevan, the town and district have been caught up in a rewarding whirl of mounting excitement and prosperity.

A dozen major oil companies and a score of smaller ones, plus service and supply companies have set up headquarters in Estevan. They've made it the latest in a line of western Canadian "oil capitals," from Redwater, Alta., to Virden, Man., that have leaped into new life since Imperial No. 1 came in at Leduc, Alta., 10 years ago to begin the modern oil developments.

While many of these towns have levelled off from their first flushes of activity, Estevan is still on its way up and rising rapidly. A few years ago its population was 5,000; today it is around 8,500 and rising faster than any other town in Saskatchewan. Many expect it will become a city of 10,000 in the near future. Its million-dollar airport handles everything from Piper Cubs to DC-3s.

On Fourth street and Twelfth avenue, modern stores, restaurants, hotels, motels, garages, service stations, car dealers and real estate offices are flourishing as never before. The town's young people have more jobs than they can handle.

Drill pipe and other equipment funnels through Estevan

Local residents and those from other provinces in Canada and from such states as North Dakota, Minnesota, New York, Oklahoma and Texas throng its streets from dawn until late at night. On Saturday evenings, oil men, farmers and their families come into town in carfuls to park by the curb, chat with old friends, shop or just watch the passing parade. They help give Estevan a friendly, festive air. Their purchases range from chocolate-dipped ice cream cones at the dairy bar to hardware at Whitley's big modern store.

Out on the highway, a young crowd mills around Charlie Nicholson's "Car-Fretoria," clamoring for chicken-in-a-basket, jumbo shrimps, hot dogs and other snacks, "It's going crazy here," said a waitress, holding up a limp wrist, "I sprayed this, car-hopping those loaded trays."

Many farmers have also shared directly in the rewards as the petroleum harvest is reaped from below their wheat fields. Art Jacques, a hearty, ruddy complexioned farmer who works with his brother Emerson at the railway express office, says, "It's hard to believe, but now I can go downtown and buy anything I want." One company found four wells on his land, providing him with royalty leases so valuable that he's been offered $50,000 for a quarter share. "When I bought the farm from my father, it was loaded with mortgages and back taxes," Art recalls.

Estevan's prosperity, however, is not based on oil alone. The increasing flow of crude oil from the big Mississippian formation that underlies southeast Saskatchewan is a fourth "crop" in the Estevan district. The others are grain, coal and clay. Thaxter and other wheat varieties are still a mainstay of its economy, although last year farmers were hard put for cash because of storing and marketing difficulties. Annual cash income from area farms is about $25 million.

The earth also yields annually two million tons of soft lignite coal from fields around nearby Berensf. These fields contain one of North America's largest lignite deposits. The strip-mining process, by which the coal is dug from the surface by huge shovels and drag-lines is a perennial tourist attraction. East of Estevan are clay pits and a provincial government clay products plant which manufactures tile and high-quality buff bricks for markets in the prairies and Ontario.

Estevan is also the site of one of the Saskatchewan Power Corp.'s largest electricity generating plants. A new $40 million plant is now under construction four miles east of the town.

Neither clay, coal nor oil production has marred the natural beauty of Estevan itself. It's far from the movie stereotype of a one-street western town in a dusty plain, although sometimes wind sweeps clouds of dust and tumbleweed through the streets. Box elders, elms, maples and chokecherry trees luxuriate on its river banks and along its residential avenues.

In the fertile river valley, Prairie Nurseries Ltd. operates on 650 acres, one of the largest tree nurseries in Canada. Its beautiful blue spruce and other tree and shrub varieties are shipped to many parts of Canada. Nearby is Estevan Greenhouses, a source of supply for most Saskatchewan florists. In the Souris
River itself, jackfish and perch are caught by anglers trolling up the river in slow-moving boats. On its banks and in the open country, wild duck, prairie chickens and Hungarian partridge are game for hunters.

Evidence of civic spirit is seen everywhere. Families picnic during the summer under the trees in Woodlawn and Rotary Parks while their children swim in a dammed-up swimming hole. In winter the swimming hole becomes a skating rink.

Closer to town, Kin-park, sponsored by the Kinsmen’s Club, and an Elks playground provide wading pools and swings for younger children. They overlook Estevan’s big ball park in the meadowland plateau where early settlers once made bricks in kilns.

Things weren’t always so green and promising in this area of Saskatchewan. In the past 50 years, Estevan has known good times and bad. The Thirties brought depressed prices with wheat selling as low as 26 cents a bushel—if you could grow it. The worst drought in history sent topsoil blowing away in the dry wind, piling up on window sills and forming sand dunes around the snow fences and gus panels of livestock. The rains came and the land revived. In the Forties World War II put wheat prices up again.

Today, old-timers look with some amusement at what’s happened to Estevan while their sons and grandsons energetically cope with the impact of the oil developments. Some 250 trailers have come to town, filled with men, women and children. Hundreds of other newcomers are renting rooms and crowding into hotels and motels. At Estevan airport, a former RCAF training base, some 500 persons live in trailers and suites converted from H-hut barracks. Two families live in rooms under the control tower.

Rents and land prices have gone skyrocket. One contractor who bought four lots from the town for $200 sold them to a pipeline company for $1,000 each. Another enterprising citizen who paid $750 for a quarter-section of land near the town seven years ago, sold his 160 acres for $16,000. One house owner, showing two eager home-seekers through his four-room house got a bid of $45 from one as they passed through the kitchen. By the time they got to the living room, the other man had bid $75. The owner refused to go above the $25 he originally asked. Many others like him have held rents down. Hotel rates have not changed.

The demand for space is so great that Constable John Stob- son quipped, “We ought to rent out these jail cells. There’s a three-room suite here.”

Two new motels have been built in town, one a double-decker of 30 units. Youthful Bud Patterson set up a crater park in a former cow pasture on the edge of town that accommodates 80 mobile homes. Before he had the wash house up, 30 trailers had moved in and little Lucille Brower from Texas was playing hide-and-go-seek with twins, Don and Alma Bergen, from Redvers, Man.

The new populace keeps Estevan’s merchants hopping. At Moss’ groceteria, heaping pyramids of fruits and vegetables and shelves full of canned goods disappear as fast as Joe Moss, a short, dark, amiable man, can put them out. “We can’t get any new help locally and if we send away for help there’s no place for them to live,” sighed Moss, as he hugged another hearty carton of canned goods along an aisle.

Joe Donaldson followed the path of prosperity from Virden, where he has a men’s wear store, to Estevan where he has set up another. He sells the tan pants and shirts, summer ski caps, wide-brimmed hats and leather jackets that help give Estevan a cowboy atmosphere. One busy oil worker bought a pair of heavy work socks every day for 10 weeks, then trundled the 70 pairs into a nearby laundry in a wheelbarrow.

The energetic Green brothers, Bill and George, work a seven-day week to keep pace with their enterprise. One of them sells music and sports goods at their store while the other manages their River Park resort with its small hotel, cabins, tavern and dance hall.

White-haired Ed Rae, a town council member and proprietor of the big service station at the west end of town, doubled his sales of Exxon products in the past year. He did more business in one month this year than the bulk station he managed in the Thirties did in an entire year. The bulk station’s business, now handled by Hugh Grant and five men, has bounded ahead with orders like 60,000 gallons of diesel fuel for one deep-test well. Assistant Agent Garvey Watson still wonders at it. He worked for 10 cents an hour on roads during the Depression.

At the offices of Estevan’s weekly Mercury, an eight-column newspaper as thick as some city dailies, the tinkle of linotype keys and the swishing of automatic presses also tell of pros- perous times. Owner-editor Andy King, magisterial-looking with his thatch of white hair and string tie, says: “I never dreamed the oil business could affect a printing house. Where we ran 10,000 copies of a job before, we now run 30,000.” His sons, Sterling and Bill, are kept on the move with job printing and the newspaper.

The town growth has also brought some furrowed brows to town councilors, “I never knew there was so darned much to this oil business,” said Harry Nicholson, a short stocky man who has been mayor for 18 years. “I thought once you got the drill rig in, that was all there was to it.” Council meetings once quit at nine p.m. but now often go through until one a.m. Their problems range from water supply to schooling for hun- dreds of small types of all grades. A new school was built in 1955 but another another $250,000 building is under way.

Last June the town installed its first traffic light, to bring order to the vehicle-jammed main stem. (One oil supply company has 50 vehicles.) For the first few days a constable had to stand in the street, blowing his whistle and flailing his arms because people wouldn’t take the red light seriously. To meet the traffic problem and the influx of new residents, Chief of Police Harry Caswell increased his force from four to eight and added a patrol car.

Most of the town folk, however, prefer these prosperity prob- lems to those of the old days. And the same is true of the towns, villages and hamlets between Estevan and the Manitoba border 85 miles to the east: Bienfait, Oxbow, Carnduff, Lampman, Steelman, Alida, Nottingham, Carnarvon and others. All have shared in the new prosperity brought by the oil developments. The advent of petroleum has opened a new era in a region rich in history and legend. Millions of years ago it was a swampy tropical jungle where dying marine life began forming...
Seventies came the explorers and surveyors of the International Boundary Commission, mapping the boundary line of the 49th parallel. Their "boundary trail" was followed in 1874 by the Northwest Mounted Police in its historic trek from the Red River to the Cypress hills and Edmonton when they drove out the whiskey traders who were demoralizing the Indians and established law and order in the west.

The trail, whose wagon-wheel ruts are still visible in places, became a thoroughfare for the early homesteaders of southeast Saskatchewan. Before the railway arrived they moved slowly on ox-carts to take up land in the 1890s around "Estevan, Assiniboia, Northwest Territories," and build their sod houses.

By 1905 the Soo Flyer was bringing in by rail increasing numbers of settlers to Estevan. It was then a village of tar-paper shacks, two big saloons and a lumber yard, existing on wheat, coal and brick industries. That was the year Saskatchewan became a province. A year later Estevan proudly proclaimed itself a town.

In taking up their homesteads, few settlers thought about oil, but most of the land deeded over to them up to 1905 gave them the mineral rights. After that date, mineral rights remained with the Crown. Then, like a tiny portent of the oil rush that was to come 40 years later, a water well being drilled for a hotel in 1913 suddenly gurgled with petroleum. At the time no one followed through with exploration, although it was the new province's first recorded oil discovery, Imperial first explored the area just after World War I, but without success.

Now the hardships of the sod-breaking years and the days of isolation and drought have passed to bring a transformation few ever dreamed of. With many oil-supply companies using Estevan as a permanent location for province-wide distribution, and with new wells coming in at the rate of almost two a day, Estevan's future is as promising as a prairie springtime.

L. D. Fraser has been elected to the board of directors. Mr. Fraser has been general manager of the marketing department for five years and, except for one year, has spent his 29-year career with the company in that department. A native of Ottawa, Mr. Fraser joined Imperial in Montreal. He served in Ottawa as resident manager and, in 1942, was assigned to the executive offices in Toronto. Three years later he became assistant manager of fuel oil and burner sales. He left marketing for a year in 1946 to become an assistant secretary of the company and returned as manager of fuel oil and burner sales. In 1950 he was appointed manager of the Manitoba marketing division and held this position until appointed marketing general manager in 1952. His election to the board fills a vacancy created by the resignation of E. S. Neal.

E. S. Neal, a director of the company for almost four years, has resigned to accept the position of deputy representative on Middle East matters for Standard Oil Co. (N.J.). His office will be in London, England. A graduate in petroleum engineering from the University of California in 1926, Mr. Neal's first position was as a geologist with Lago Petroleum Corp. in Venezuela. Twelve years later he joined Standard Oil Co. (N.J.) to take charge of world-wide reserve studies and, later, managed the producing economies section. He joined Imperial Oil in 1953 as general manager of the producing department and was elected a director in 1953. He held both these positions for two years but gave up his post as general manager in 1955 to devote all his time to his duties on the board of directors.

C. T. Wright appointed general manager, marketing

C. T. Wright, formerly deputy general manager, has succeeded Mr. Fraser as general manager of the marketing department. In this position he is in charge of the company's sales organization from coast to coast.

Mr. Wright joined Imperial in 1925 as a salesman in Chatham, Ont. Later he was a district manager in Windsor and London, chairman of the marketing department distribution committee in Toronto and manager of the department's operating division. In 1945 he was named operations co-ordinator and five years later, general operations manager. He was assistant general manager of the department for three years before his appointment as deputy general manager last year.
Traffic accidents cost everyone money

by Fergus Cronin

It is quite possible that on the way to work this morning you passed a traffic accident. You probably went on your way thinking that it was unfortunate for the people involved, but it didn’t really affect you. But it did affect you.

For whether or not you drive a car and even if you are never involved in a traffic accident, the cost of all traffic accidents on Canadian roads this year will eventually be shared by you.

A conservative estimate of the cost of traffic accidents in Canada in 1955 is $300 million or about one-third the cost of the Canadian share of the St. Lawrence Seaway. To put it another way it represents about $20 for every adult, adolescent and infant in the country—$80 per Canadian household.

These costs were not borne by insurance companies, municipal bodies and state agencies. They were paid by the Canadian wage earner and taxpayer.

They weren’t billed as a lump sum under a neat heading, such as “Cost of traffic accidents—$300 million.” Some of the costs were hidden in tax bills as rising costs for police enforcement, hospital administration, welfare departments and judiciary expenses. They were billed, too, in increased insurance costs.

It would be nice to say that $300 million was the total cost to the nation from traffic accidents in 1955. But it wasn’t. The cost in impaired lives, broken homes, orphaned children and loss of productivity and creativeness cannot be expressed in money. And that cost is rising every day.

In the 10 years from 1946 to 1955, 24,880 people were killed by traffic accidents. In other words the total population of a town the size of Niagara Falls, Ont., or Glace Bay, N.S., was
eliminated in that decade. In the same period there were fewer earnings and injured to popula
leave some 60,000 over to start another town.
In 1955, there were 224,548 traffic accidents in Canada in which 65,635 persons were injured and 2,799 died. This means that there was a traffic accident every 2.5 minutes; a Canadian was injured in traffic accidents every eight minutes and every three hours one person met violent death on our roads.
It is customary for Canadians to view horror the number of people killed on American highways, particularly during holiday periods. Perhaps we should view horror what is happening at home for, reckoned on total stillages worked, the death rate on the roads in Canada is higher. In the U.S. the toll was 84 deaths per billion miles traveled in 1955; in Canada it was 80.
The accident rate per 100,000 population in Canada has also been going up pretty steadily; from a low of nine in 1933 to a peak of 17 in 1941, down to 12 in 1944, but since then rising steadily, hitting a new high in 1952 of 20.5. One counseling feature is the falling rate of deaths per 100,000 registered motor vehicles; from 10.9 in 1946 to 7.68 in 1955. But that single statistic is little comfort to the suffering number of victims and their families.
How do you calculate the economic loss of traffic accidents? The National Safety Council of the U.S. has arrived at a figure which is adaptable to the Canadian scene. In its analysis the NSC included the following:
- a) value of anticipated future earnings (including loss of wages due to temporary disability in work, lower wages due to permanent or partial disability and value of reasonable future earnings cut off by total disability or death);
- b) medical expenses;
- c) property damage;
- d) overhead cost of insurance (difference between premiums and claims paid).

After totaling these amounts, the NSC divided the total by the number of deaths and, for the year 1955, deduced that all motor-vehicle accidents cost $120,000 per death. In any one community, the cost of all accidents involving death, injury or property damage may be roughly tallied by multiplying the number of deaths by $120,000. (The rate at which accident costs have been soaring is suggested by the fact that the NSC as-recently as 1945 was using the figure $45,000.)

The cost of traffic accidents in Canada may be based on this American figure of $120,000 by taking into account the relative difference in living costs in the two countries. The average city family in Canada in 1953 (most recent figures available) spent $4,360; about 89 percent of the $4,891 spent by the average American family that year. Applying this percentage to the NSC's figure of $120,000 means that all Canadian motor-vehicle accident costs about $106,000 for each death. Multiplying that sum by 2,799—the number killed in 1955—gives the staggering total economic loss of $298,933,200, or roughly $300 million.

This is 50 percent higher than the estimate used by the Canadian Highway Safety Conference at the annual conven-
ing of the Canadian Good Roads Association in Quebec City last year. There, Col. W. A. Breyer, general manager of the con-
ference, used the figure $280 million. He explained that this was a very rough calculation. Col. Breyer took the American figure of $120,000 and reduced it to $90,000 to take into account the fact that labor costs are lower in Canada; multiplying $90,000 by 1955's total deaths gave him a total of almost $212 million. This he reduced again to $200 million to be conservative.

But even $300 million does not take into account all the costs. The cost of accidents can be billed by examining one case, a minor accident listed in the records of the company involved and the insuring company as a $200 accident. A driver, a farmer, general manager of the Ontario Safety League and now a fleet management consultant, ran down the facts.
A truck was proceeding east along a two-lane highway when a car drove out of a farmer's lane in front. The truck hit the rear of the farmer's car. The farmer's claim was $60; damage to the truck was $140: a total of $200. But let's go a little deeper.
The accident occurred 60 miles from the company terminal.
The truck was unable to proceed. The shipment it was carrying was urgently needed by a customer, and so another truck was dispatched to transport and deliver the load. It happened during the company's busy season, so it was necessary to rent the extra truck. The rented truck was retained for three days while the damaged truck was repaired.
The crippled vehicle had to be towed back to the terminal for repairs. The insurance company paid all expenses after settlement, so the farmer sued. The case was tried in the city near the accident scene. The truck driver was charged with careless driving, which means an additional court appearance. So the following expense item can be listed:

| Extra truck, 60 miles at 25 cents | $15.00 |
| Extra driver's wages for two days | 20.00 |
| Truck rental | 30.00 |
| Tow truck, 120 miles at 25 cents | 30.00 |
| Expenses, two court appearances | 30.00 |

Total: $555.70

This so-called $200 accident actually costs a minimum of $555.70. The expense did not end there because some of it is intangible. The farmer had been a customer of the company and the trucker had been a good employee and good driver. It is estimated that 5 percent of the company's potential customers must have recognized the truck being towed, and may have formed a poor opinion of the company. Inconvenience is delivered to the employee's family and to the accident report, which makes the company's record, which determines insurance rates, was adversely affected.

When a claim is settled, a payment is made to the insurance company. Underwriters will use a rule-of-thumb which says that every dollar paid on claims costs the insured four dollars more. "Where can we dig up actual costs," says Breyer, "this one-plus-four formula holds pretty true." And A. H. Rowan, director of the accident records division, Ontario Department of Highways, says: "This estimate is widely used in the insurance industry.

The All-Canada Insurance Federation calculated that the average accident in 1955—involving either injury or property damage—cost Canadian insurance underwriters $235. If we apply the one-plus-four principle and to the total number of accidents in 1955—224,548—we get a grand total of $268,093,860. But this principle does not cover all losses, and it is not a help to the cause of fatalities. So the $300 million obtained from the Canadian equivalent of the NSC's $120,000 per death would seem to be far from an exaggeration.
This cost is based on 1953 deaths. Col. Breyer predicts that 1955 figures will show a total of 1,100 deaths. This would mean a total economic loss 11 percent higher than for 1955, or in the range of $333 million—a per capita cost of almost $21, and still a conservative estimate. Here is why.

The median age of all persons killed by motor vehicles was 37. If about 37, we assume that 2,799 persons killed in 1955 would have earned an average of $60 a week from 37 to 65, the total wage loss alone would amount to $324 million. In addition, accidents cost be credited with an un-known percentage of the cost of law enforcement in the immediate vicinity of accidents, the cost of traffic courts and of uninsured judgment funds—these operate in eight provinces and usually make restitution only to part to victims of accidents in which the responsible party is either unknown or insurable.

Figuring the total cost of accidents is further complicated by two factors: not all accidents are covered by insurance, and only a fraction of all accidents are reported. Robie Dandun, transportation economist of the U.S. Bureau of Public Roads, says: "Even in states with the best accident-reporting records, unreported accidents run as high as 50 to 60 percent of the total.

An ambitious attempt to measure both tangible and intangible accident costs is now being made in Massachusetts by the department of public works and registry of motor vehicles in co-operation with the federal bureau of public roads. Only the first of three phases of the study has been completed: the direct cost of motor-vehicle accidents to the state's personal and property losses, loss of car owners, passengers in their vehicles and to pedestrians killed or injured by them. The second part of the study is addressed to the accidents of truck owners and to the victims of accident victims, and the third will determine the indirect cost of motor-vehicle accidents to all citizens of the state. When the study is complete, in perhaps a year's time, the public will have a better perception of the total economic cost of traffic accidents—and it will not doubt be startling. Similar studies have been started in Utah and New Mexico.

Already the Massachusetts studies show that the direct cost of motor-vehicle accidents, involving passenger cars only, amounts to about $10 a year for every man, woman and child in the state. As direct costs, the study included the value of the following losses: property damage, medical costs, damages awarded in excess of other direct costs, attorneys' services and court fees. Such indirect costs as loss of earnings and overhead cost of accident insurance would usually double this per capita figure.

Dr. C. A. Roberts, principal medical officer of the medical health division, Department of Health and Welfare, said at the Good Roads convention that among Canadian children dying between the ages of five and 19, one in every five is killed by a car. The motor vehicle is the seventh highest cause of death—polio in its worst years never caused as many deaths and injuries.

Dr. Roberts felt that ignorance by the general public of the high rate of traffic deaths was the reason for an apparent public indifference to the road toll. "If the public realized the toll it takes each year on the highways, it would certainly demand that something be done." And the toll is frightening: in 1934 motor vehicles accounted for 1.1 percent of all deaths; in 1955 they accounted for 2.39%.
miners of the permafrost

Working a frost-ridden mine on the shores of Hudson Bay
doesn't faze the men of North Rankin Nickel Mines.
But bringing in every toothpick, timber and
gallon of oil by air or sea is an awesome task

R. E. "Bob" Miller, a tall, abrupt, 62-year-old native of New Brunswick who has been in mining all his working life, "is just as important as electricity is to the outside world. It feeds our diesel engines for electricity, our boilers to generate steam, it drives our trucks and tractors. If we can't get oil, we can't operate."

"And if we had to get a year's supply of oil here in drums, it would take 15,000 46-gallon drums. That would mean a complete summer's work alone just unloading and piling them."

Last year most of the effort at North Rankin was expended above ground: constructing a mill to handle the mine's ore, a warehouse and garage to house equipment and supplies, buildings to shelter the blasting powder, a two-storey bunkhouse providing two-man rooms for the workers, and cottages for key personnel. But the reason for it all, of course, is the 300-foot shaft beneath the tail headframe. It's a shaft Mine Superintendent Harry Leavitt of Montreal likes to describe this way: "Just look inside your deep-freeze—same thing."

And that's a fair enough description of the problems to be expected in that permafrost-chilled mine. There have been mines sunk and worked further north—Swedish iron mines are an example—but due to the capricious curves of the permafrost belt none of those mines has to deal with frost more than a relatively few feet below ground. At Rankin Inlet they've

Spurred by findings of high-grade nickel ore, North Rankin has been operating since 1951 in the bleak, barren and rocky countryside.

The men work hard for long hours but the pay is good and there's no place to spend it

Pictures and story by Bill MacPherson

Imperial Oil Review, April 1957
diamond-drilled as deep as 700 feet without reaching the depth of the permafrost.

It makes an enormous difference. Instead of the sixtysix temperatures in a normal mine at the 300-foot level the temperature of the rock is a bone-chilling 20 degrees. Heat pumped from the surface raises the air temperature only a few degrees higher. Operations at Rankin Inlet already have been hampered. Underground drilling must be done by compressed air. Compression of Ni heats it. Hot air hitting the 20-degree cold produces condensation—+the compressed-air lines freeze. North Rankin uses two water-cooling chambers for the lines before they hit the red rock and that's helped, but the problem hasn't been completely licked.

North Rankin brings both brain and brawn to bear on problems such as these, but already its men have got the idea that luck is on their side, too. An example of this was the "strike" made by a driller when the shaft was being sunk. His drill bit into an underground stream of water that was just about twice as salty as the sea water of Hudson Bay. He hit that stream about the time mine officials were wondering how they were going to supply the water necessary for cooling drill bits and washing down dust and rock particles without having the shaft coated with a treacherous, slippery mess of ice. That unexpected saltwater stream was the answer—its freezing point is between 15 and 18 degrees.

On full production, North Rankin expects to mill daily 250 tons of ore, which will be reduced in an adjoining mill to 55 tons of concentrate. This will be bagged and stored at Rankin Inlet awaiting the opening of shipping season, when it will be sent by an all-water route to Chichelemit, Que., for refining by an affiliated company.

But underground operations pose just one set of problems to the men who have dared to launch a modern mining opera-

River, Man., who has a wife, a daughter just starting school and two quarter-sections of land back home, summed it up pretty well. A carpentry foreman at Rankin, Harry hunched against a bitter northwest wind one morning recently, squinted at the bleak landscape and declared:

"Cocker what a man will do for $30, isn't it?"

He was talking about his average daily pay—seven days a week. He stayed at Rankin until Christmas, then visited his family. This spring, after another hitch at Rankin, he'll have the cold cash to buy the new car he has been hankering after and be able to pay off the mortgage on his two quarter-

sections of land.

Contributing mightily to the general morale, too, is a man named Alex Amyotte, of Bonfield, Ont., who brings 41 years of experience to bear on the problem of cooking for these men. He attacks North Rankin's vast store of excellent food (20 tons of fresh meat, 185 cases of canned meat, 160 cases of eggs, fresh fruit and vegetables by air as needed) with a skill to match the finest city hotel chef.

And as an additional morale-builder there are always the 20 Eskimos who are really the base of North Rankin's labor force; diligent and quick-to-learn workers who make work seem like play by their constant chatter and joking.

Bob Miller, not a man to lavish false praise says: "In all my years of experience with all kinds of labor, I have never found any better than the Eskimos. They're hard workers, cheerful, and wonderful men about the sea." Miller terms as sheer "miraculous" the way Shreelookok, who learned English in the Baker Lake Anglican mission in which he was raised, but who has never learned to read or write, can calmly take

Families of Eskimo workers are attended by the company doctor

A floating pipe line to the Fliranch's discharge connections.

The Fliranch started her pumps. Twenty-four and one-half hours after she had inched in, the tanker headed out into Hudson Bay again. Behind her left her cargo of oil—700,000 gallons in hilltop tanks and 20,000 in mine-site storage tanks. This was the kind of job that would be tough enough for an experienced pipe line crew in a busy port. Performed in sub-

Arctic wilderness, it was almost incredible. But that's how they operate at Rankin Inlet. Instead of calling for something they know can't be found within a thousand miles, they improvise.

"Just like the Pilgrim Fathers," as Keith Hartwell said one morning as he watched Blacksmith John Solovy of Winnipeg use an old cutter chisel to hammer out a new cutter chisel.

"Only more modern—and without Priscilla!"

The conversation-evoking absence of white women is only part of the price the 72 men now at Rankin Inlet pay for their isolation. Other disadvantages are long hours (12 a day, seven days a week), no recreation facilities, and uncertain plane arrivals. "Next Mail" reads a sign over the outgoing mail box in the administration building, and in the slot reserved for the date someone has inked, "That's a good question."

But the compensations are so considerable that the morale of the men is top-notch. The main compensation is money.
Bérchman Lemay had never thought of being anything but a farmer. Then the oil men came to his land and he became an

**Habitan Drillr**

Pictures and story by Michael Jacot

The dawning sun spread over the Quebec countryside driving back the mist from the St. Lawrence River, as Bérchman Lemay herded his cows across the dirt road in front of his farmhouse. There was a fall chill in the air. It was five a.m. Behind him, through the screen door, came the smell of the bacon his wife was cooking. He smelled it in an absent-minded way. He was thinking of something else.

His mind—and his heart—were across the road in his pasture where, with an almost feverish activity, some men were dismantling several tons of equipment.

Four months earlier the same crew of contract drillers, trucks, trailers, and machinery had arrived on his land to drill an oil well for Imperial. Like so many exploratory wells, this wildcat had not been a success. Today the crew was leaving to start another wildcat on the south shore of the St. Lawrence opposite Three Rivers, about 40 miles to the west. To Bérchman this was no ordinary departure. It was something very personal. This had not been just another oil well, but his well, on his land, and he had been a part of it. He had worked as a member of the team undertaking this great adventure.

It was there that Bérchman Lemay, habitant farmer, whose family, according to ancient parchments in the Quebec archives came to farm the shores of the St. Lawrence in the 1680s, recalled his brief role as an oil man. It had been an experience he would remember to the end of his days.

Bérchman is 27, tall, thin, long-armed, with a small mustache, blue eyes and a big grin. He was born in the village of Leclercville, down by the river bank about one and a half miles to the east of his farm. He has lived in this quiet countryside all his life. He knows every tree as a personal friend and the small brook down by the farmhouse as a confidant.

He bought the farm five years ago, and with his wife, Edith, his children, Lyne, Jules and Simon, and his big sheep dog, he lives contentedly. It is a thin strip of a farm, 700 feet wide and one and a quarter miles deep, the size of many a farm along the fertile shores of the St. Lawrence. It consists of a big house, good barns, 17 cows, two horses. It has electricity and plenty of water. In summer Bérchman sells hay and milk. In winter he cuts pulpwood by hand in the forest at the back of the farm and sells it to the big mills in Three Rivers.

Bérchman, standing now on the wide white expanse of his own verandah, paused. The crew and the drilling rig had become so much a part of the farm and his life that he had forgotten they would ever have to leave. The thought now stuck in his mind like a piece of apple in a hollow tooth.

When the rig first arrived from Chatham, Ont., he had been reluctant about having someone else on his land, especially a group of men who knew no French. But soon a sign language grew up between the habitant farmer and the oil men and a camaraderie sprang up between the drillers’ families and his own. The idea that there were two crops really, one from above the soil and another from deep below it, took root in his mind.

The brief life of Bérchman Lemay, oil driller, had begun a couple of months before when one of the oil men, Hubert Carson of Chatham, a big fellow who looked as though he too should be a farmer, approached Bérchman and asked if he knew anything about machinery. At first, because of the complications of the sign language, Bérchman thought Carson wanted to see his new electric milking machinery. He smiled and put his hands to his head. Eventually Carson made him understand that one of the drillers had hurt his foot and would be away for some time, and that he would like Bérchman to work as a full-time employee on the rig.

An oil man! The idea was fantastic. He had never seen himself as anything but a farmer. Bérchman understood it would be a long day, often with night shifts too. He made up his mind before Hubert stopped explaining, but went in and consulted his wife.

Later, he engaged François Goulet, 13-year-old son of a neighbor, to do some of the chores. If the boy milked when he was on duty, he could manage the rest when he was off.

The day shift began at noon and the night shift at midnight. That gave him some time to work around the farm. Sleeping during the day was a new experience. More novel though, was the work itself. Working with the other drillers in the small hut they had erected at the base of the 40-foot rig, with the thudding of the diesel engine in his ears, the smell of hot oil, the handling of the sticky gray mud bailed from the well, gave him a new perspective on life. He found himself taken up with the job and getting excited about it. There was a sense of expen—
tancy about an oil rig. It was impossible to escape it.

Benchman soon found himself wondering, as they drilled deeper, foot by foot, whether they would strike oil. The mineral rights on his farm, like nearly all those in the province, belong to the government, so the only benefit he would receive would be the rental Imperial would pay for using his land. But the feeling of expectancy existed nevertheless. The chances of finding oil in a wildcard, he had been told, were very slim. But still be hoped.

Another local man was working with the crew. Louis Hébert had worked on rigs before and gave Benchman some tips.

Soon the news spread. Relatives came over to see Benchman, the oil man. Uncles, aunts, sisters, brothers, cousins came to kid him. He proudly conducted tours of the rig (at a distance of course for, as he explained, it's quite a complicated operation). He showed off such features as the neat trailers of the crew, the engines, the crew's children, their wives and even their washing.

The newspapers got to know that they were drilling on Benchman's farm and he had his picture in the papers, and cameramen came to take pictures for television.

The leaves began to turn red and gusting winds swept across the top of the hill. The nights became cold. The hole cut deeper under Benchman's field. Now it was more than 3,000 feet below his pasture.

Then, one day when Benchman sat in the hut, beside the oil heater, surrounded by the crew's pin-ups and staring at the seasaw action of the cable-tool drill, the telephone rang. One of the drillers answered and from his face Benchman knew that something was wrong. The order had come through that work on the well was to stop. As the diesel engine ground to a halt, no one spoke. To the drillers it was just another unsuccessful well—the lack of the draw. To Benchman there was a sense of deep loss as if part of his life had stopped.

He recovered himself and, with gestures, signified he would hold a party that night at his house. His wife began preparations soon after. Benchman himself brewed a huge pot of coffee. He wanted to make sure his friends tasted real French-Canadian powow-coffee (liqueur brandy in black coffee).

As the drillers and their wives sat around in the big farmhouse kitchen, a lively party started. The men soon noticed that there was something unusual about the coffee. By the time they had drunk the third cup, Benchman produced an accordion and a sing-song was started.

Then someone remembered poor Louis Hébert. He was sleeping ready for the next shift. No one had told him of the shut-down. Benchman made his way carefully through the night to Hébert's farm to wake him. Yes, it was true he told his friend. It was all over. He must come to the party. His presence was requested by the drillers. Louis was soon singing into the night with the rest.

Next morning, with a heavy heart Benchman watched the crew pack up. Carefully the men plugged the empty hole so his cows wouldn't fall in. Benchman waved goodbye.

He was a man who had lived in two worlds. The effect of the visitors had rippled outwards over every aspect of his life. He felt grateful and happier for his new experience.

Next year a fine crop of hay would probably be standing where the rig had stood. It would be just another field. But for many a night Benchman knew he would hear the rumble and throb of diesel engines and wake to dream of two crops on his land—one from above and another from deep below.

Attractive, serene villages hug the south shore of the St. Lawrence near the location of Imperial's drilling operations in Quebec.

by JAMES HORNICK

At the end of a long, weary day working from the Canadair plant on the outskirts of Montreal, Hedley James Everard finds pleasant diversion among his flower beds, nurturing the dahlias, begonias and crocuses he grows with such skill and in such profusion that the surplus goes to neighborhood florists. He has another hobby: breeding tropical fish.

"Ex" Everard is a test pilot. In important respects, he is a fairly typical one. He is the product of a small Ontario town, a fine physical specimen in his middle thirties, with a serious disposition, an exemplary war record, a young family and a new bungalow. Test flying is at the same time his passion and his career.

He, along with most of his 60-odd contemporaries across Canada, was more than somewhat annoyed a few years ago by the traditionally lurid characterization of his profession in a national magazine:

"Mine's an eight-to-five job with a difference," brayed a synthetic authority in the story with the insulsiup-injury nickname of Lucky. "I never know if I'll be around to drive my own car home or if I'll be driven by some other guy to a funeral home. I'm a jet test pilot.

No one who's called Lucky, who proclaims death as his constant companion, would be likely to remain long among men dedicated by temperament and experience to the proposition: "There are old pilots and there are bold pilots. But there are no old, bold pilots."

The average age of Canadian test pilots is 35. Most have been flying for 15 years, many for 20. There is no arbitrary retire-
ment age. A test pilot who lives moderately, as most do, may expect to retain his efficiency into his early fifties.

Everard would be the last to deny that his work has its hazards. In fact, some Canadian insurance companies place test pilots in a higher risk category than steelworkers. But he keenly resents any implication that he and his fellows are daredevils hell-bent for adventure, needlessly risking their lives. The hazard factor is inescapable, he says, due to the nature of the job, but it is significantly modified by experience. He has every intention of living to a ripe old age.

Don Rogers, chief flight operations of Avro Aircraft Ltd., Malton, designer and manufacturer of jet all-weather fighters, summed the job up this way: "Modern test flying is not a matter of making a spectacular take-off, and then buzzing noisily around the old family homestead a few times, followed by a flashy landing in complete disregard of all air regulations. It is, instead, a serious business involving careful study and careful preparation for the flight and precise flying followed by accurate and complete recording of snags."

There are no statistics to indicate the mortality rate among test pilots per hours of flying. But at Avro, where six pilots fly 25 to 30 hours a month, only two pilots have lost their lives in the past 15 years. Rogers, at 40 a veteran of more than 21 years in aviation, has logged over 5,000 hours without a serious accident.

"Things happen that seem exciting at the time," he says. "You do whatever has to be done, come back, write it up and find another airplane."

Everard's boss is Bill Longhurst, director of flight operations at Cansair Ltd., Montreal, manufacturer of jet fighters and trainers. "The way I look on test flying," he says, "is that I wouldn't mind my young son taking it up as a career. He would just have to realize that flying is a business, not a sport. Then he would be safer flying than driving an automobile."

There is the grimy iron case of Herbert Preece, an RCAF veteran who flew bombers in the Middle East and Burma, was discharged after the war and re-enlisted in 1949. It was his job to test new jets and reconditioned trainers. On leave in Regina he visited an exhibition and climbed into a miniature plane on the midway, one of several attached to long steel arms and swung through the air around a pylon. At the top of a loop Preece was pitched out. His injuries were fatal.

Canada's professional test pilots are almost evenly divided between the military and about a dozen companies. They specialize in two general fields, experimental and production flying. The former, dealing with unproved aircraft and aircraft equipment, is the more hazardous. The latter involves routine, albeit strenuous, testing of proved designs off production lines. Salaries range from $6,000 to $15,000 a year.

To break into the business, a man must satisfy rigid requirements of experience, temperament and health. Avro insists a production pilot candidate have 1,200 to 1,500 hours of flying, about half in jets. He should be 25 or 26 years old and have a keen, inquiring mind, a calm disposition and a ready reserve of courage. He must hold a commercial pilot's license, which requires a tough physical examination, and pass a decompression chamber test, which simulates the effect on the human body of high altitudes.

Canadair, in addition, prefers that his applicants possess either a degree in engineering or a diploma from a test pilot course. There are only three such courses in the western world. They are operated by the Royal Air Force, the United States Air Force and the U.S. Navy. The 10-month courses cost $35,000 to $50,000 per pupil, so that it is virtually impossible for an individual to gain admission. The majority of trainers are hand-picked military pilots.

Those who make the grade with a manufacturer—usually after extensive military experience—make one to five flights a day, depending on weather conditions and the dictates of their assignment. When they are not flying, they are usually studying: reading aeronautical journals or conferring with engineering colleagues on some feature of a new design or modification.

Ready for a routine flight beyond the speed of sound, Canadair's Everest is the science-fiction conception of Martian man. He sits wedged in a jack-in-the-box ejection seat, wearing a form-fitting gravity suit, coveralls, heavy boots, 15-pound custom-moulded crash helmet, tinted visor, oxygen mask and earphones, notepad strapped to one knee, festooned with para-chute harness and communications cords. But there's nothing unworldly about his approach to his task; it is, if such is possible under the circumstances, a decidedly down-to-earth approach.

Though he takes every precaution, a test pilot is nonetheless aware of the unpredictable hazards of his business—even in the most pedestrian of assignments. William Fordecher was indoctrinating three U.S. Army pilots in the handling of a tried and trusted de Haviland Otter transport when, at 5,000 feet over suburban Toronto, one wing wrenched loose, goug off the tail and sent the remaining cartwheeling to explode in flames in a farmer's field. All aboard were killed. It was the only fatal accident for a de Haviland test pilot on duty in the company's 29-year history. An investigation brought forth the suggestion that structural failure in the Otter was induced by a relatively new phenomenon of flight—the turbulent wake of a passing jet.

Avro chief experimental pilot Janusz Zurawowski escaped with a minor ankle fracture and was back on the job a few weeks after ejecting from an out-of-control CF-100 fighter at 7,000 feet. He had been returning to Malton from armament trials when mechanical difficulties developed in the flying controls. "I tried everything," he said later, "but nothing worked." His parachute deployed him about 500 yards from the smoking wreckage which had become the pyre of his flight observer. Four months later, the landing gear of another experimental CF-100 failed, causing the aircraft to skid on its belly for 100 yards. Zurawowski escaped uncathed.

But these are things test pilots rarely discuss. Al Lilly, first Canadian to break the so-called sound barrier, former chief test pilot and now manager of aircraft sales at Canadair, writes: "It has always seemed to me that, where there was already considerable glamour attached to aviation, test flying was considerably overdone. It has been almost an obsession with me to soft-pedal test flying."

This is the same Al Lilly, the no-nonsense ex-Montie who conducted or supervised the flight trials of Canadair's four-engine airliners, the North Star and the Canadair-Four, and of the best Canadian-built Sabre jet fighters. His company, after summarizing the latter assignment, issued this citation: "In order that these tests might be properly accomplished, Mr. Lilly exposed himself to extremes of physical fatigue and strain far beyond the requirements of any other normal flight. His work has assisted materially in building up the nation's knowledge in the little-known field of sonic flight."

Al Lilly is not the only test pilot to use his job as a stepping stone to greater things. Russ Bannock, who joined de Haviland after a distinguished war career, is now a member of his company's board of directors. Doug Givens, another ex-test pilot, has become de Haviland's representative in Washington.

Canada's first test pilot was the Hon. John Alexander Douglas McCurdy, who, at the age of 21 and a recent graduate of the University of Toronto's School of Practical Science, took off on February 23, 1909 from the frozen surface of Baddeck Bay, in the Bras d'Oir Lakes region of Cape Breton. His aircraft, built by Alexander Graham Bell's Aerial Experiment Association, was a thin-looking contraption known as the Silver Dart. It weighed 800 pounds and had a 40-horsepower engine. It flew for half a mile and reached an altitude of 30 feet, earning for McCurdy the distinction of being the first man in the British Empire to fly a heavier-than-air machine.

The Canadian aircraft industry was founded late in 1916 when the Imperial Munitions Board formed Canadian Aeroplanes Ltd. In Toronto. For the first time—and also for the last in two decades—there was a substantial demand for test pilots. Some 2,000 aircraft, most of them Curtiss JN-4 Canuck trainers, were produced. The end of the war also ended aircraft manufacturing and "factory fliers" turned to other fields.

The experience of one manufacturer indicates the between-wars demand for test pilots. From 1923 to 1932, the newly-established aircraft division of Canadian Vickers Ltd., Montreal, received a contract from the Canadian government to produce eight Viking flying boats. The following year, the company added a design department to develop aircraft specifically suited to Canadian conditions. The most successful was the Vedette, a three-seat biplane flying boat. Between 1926 and 1930 some 60 were built.
mainly for RCAF forestry patrol and photographic missions.

It was during this period that the first Canadian entered the rolls of the Caterpillar Club, an organization of people whose lives have been saved by parachutes. Jack Caldwell, a Vickers test pilot, was cruising over the St. Lawrence in a Vedette when it spun out of control. He bailed out at 5,000 feet and landed in the river. The wind kept his parachute inflated and it towed him along the surface until he was able to reach a small island. The Vedette was a total loss.

Vickers also built eight Varuna and seven Vancouver flying boats and developed prototypes of four other types. Between 1928 and 1931 it built under license two types of bush plane, but for the next three years, its order books were bare. Then there was a modest resurgence in defense orders: 20 Northrop Deltas and 40 Staircases. And Vickers was by all odds the biggest name in the Canadian industry.

In the period of defense buildup immediately prior to World War II, the industry went through a hectic expansion. During the war, when Canada turned out 16,418 aircraft of several types, test pilots were once more in demand. One of the memorable dates of the era was August 6, 1943, when Ernest Taylor, chief test pilot of Victory Aircraft, Malton, took aloft the Ruhr Express, the first of 430 Lancaster four-engine bombers built in this country.

RCAF test pilots, meanwhile, were performing much the same type of work they do today. They made strength tests on the Cornell trainer, some of which had experienced structural failures in the air, and vibration analyses on the Canso Crane trainer, which showed tail flutter as having been the cause of several hitherto unexplained accidents. They made tests, too, on the Harvard trainer, since at times over-exuberant students had returned with excessive permanent buckling of the upper wing skin. In the expectation of a shortage of aluminium they experimented with aircraft components made from moulded plywood. Research continued into the problems of de-icing, which RCAF pilots had explored as early as 1935.

After the war, when the industry again fell into a slump, test pilots once more scanned the classified columns of the newspapers for other jobs. Consequently, when de Havilland Aircraft of Canada Ltd., Downsview, produced Canada's first home-designed postwar aircraft, the Chipmunk elementary trainer, an experienced British test pilot was borrowed to conduct the early trials.

And when Avro brought out its Jetliner transport and its CF-100 fighter, it was British manufacturers again who provided the pilots. It is only in the past few years that Canada has won self-sufficiency in the field of test pilots.

In that time, young veterans like Ev Everard and older veterans like Don Rogers have worked and studied and accumulated the experience for which study is no substitute. Their ranks have been leavened by such men as Janusz Zurakowski, Polish-born Battle of Britain ace described by British airman Neville Duke as the world's best test pilot; Michael Cooper-Slipper, a young Briton who joined Avro as a mechanic to be on the spot when his chosen job became available; and George Neale, who worked as a mechanic and a factory inspector on his way towards becoming chief test pilot for de Havilland.

Leaders of the industry say that when Avro rolls out its CF-105 supersonic interceptor, Canadair's 75-ton, 24-hour endurance CL-28 sub-hunter, and de Havilland its twin-engine DHC-4 troop transport, no call to the outside experts will be necessary. Canadian test pilots will handle the jobs.

Flight tests began this month on Canadair's long-range, low-altitude sub-hunter. At left are Ev Everard, Al Lilly and Bill Longhurst.