Progress of prairie oil

In less than four years the new oil activities in Alberta have brought many benefits which have resulted in the strengthening of the Canadian economy in general and of the Alberta and prairie economies in particular.

As described in the following pages, Canada’s prairie provinces are benefiting from lower prices for oil products. This has come about step by step as a progressive development accompanying the transformation of the Canadian oil industry.

The price benefits are only one of the many changes in Canada brought about by the new discoveries of oil. Because of geography, Alberta and the prairies have benefited first and most directly. To Alberta the new oil has meant the development of a great new industry — wide ranging from the province’s agriculture, the establishment of new business, wider employment, higher living standards, and enlarged and improved government services and facilities provided by provincial revenues from oil.

The extent of the transformation of Alberta’s oil industry was defined recently by G. L. Stewart, president of Imperial Oil, when he pointed out that:

Before Leduc was discovered in 1947 the estimated proven oil reserves in Alberta were 11 million barrels. Today, they are well above the billion barrel mark.

Before Leduc, oil exploration and development expenditure on the prairies were about $2.2 million per year; this year they are estimated at more than $12 million a month.

Before Leduc, Alberta had 32 producing wells with only one important oil field — Turner Valley, where production was declining; today the province has approximately 1,300 producing wells, a substantial list of proven fields of which Leduc, Woodbend, and Redwater are at least “rank as major oil fields in any oil man’s eye.”

These are among the accomplishments which Mr. Stewart calls the initial stage of western oil development. That stage is coming to a close as new and different problems arise. In the next phase, the oil industry will continue to exert every effort to bring still further benefits to all of Canada.

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Picture Credits

On the front cover

Our front cover is a scene during the construction of the Imperial Oil Refinery when workmen were lifting the last or jacket or its frame into position. To be the world’s largest lake tanker, the Imperial Oil Refinery from Collinswood and its sister ship, the Imperial Redwater, built at Port Arthur, will transport Alberta crude across the Great Lakes to Ontario refineries. See story page 14.
Lower Prices On the Prairies

It's not very often that prices come down nowadays, so that when they do it's worth taking a look at what has brought them down and why.

When crude oil began to move on October 4th through the Interprovincial Pipe Line from Edmonton to Regina, the following general forecast of petroleum prices in the prairies could have been made. Some of these changes have, of course, already taken place:

Winnipeg and most of Manitoba—lower prices for gasoline and other oil products in October, followed by substantial reductions in the spring and summer. Regina and most of south central Saskatchewan—sharply lower gasoline prices in October, followed by further moderate reductions in the spring.

Alberta and northern Saskatchewan—no price changes looked for until spring, when a moderate reduction is expected.

Now, long-term predictions are not always accurate, whether they are made about prices or the weather. Yet the beginning of the eastward movement of Alberta crude by way of the pipe line was so definite and calculable a matter that fairly precise forecasts could be made.

Such a forecast was made on September 20 by Imperial's executive vice-president, John R. White. Speaking at Winnipeg he said: "No matter what happens to world prices, Winnipeg prices will still be between four and five cents lower than they would have been if this crude oil movement to Sarnia had not taken place." Prices in the prairies would, in short, continue to feel the effect of world-wide price movements, but by next spring they would ride up or down at a comparatively lower figure.

There are two main reasons for these price cuts, both tied up with the pipe line. This fall, the pipe line reduced the cost of moving oil to Saskatchewan and Manitoba refineries, bringing a saving that was passed along to the consumer. Next spring, the pipe line (plus new tankers, docks and storage) will make it possible to send Alberta oil to the lower Great Lakes. To get this larger volume of business the producer will reduce his prices and so provide another saving for the prairie consumer.

Like most of the recent oil developments in western Canada, the price reductions stemmed from the discovery of crude at Leduc in February, 1947.
Wages in Canada have gone up much faster than gasoline prices

$4.00

1945 WAGES 1946 WAGES 1947 WAGES 1948 WAGES 1949 WAGES

$3.26 3.26 3.97 4.01 3.97

At that time, the first crude from the new reservoir found its market in refineries at Moose Jaw and Regina. To do so, it had to sell at a price that would compete with oil from the fields—Turner Valley in Alberta and Cutbank in Montana—which would otherwise have supplied those refinery centres.

It was about a year and a half later before the supply of Alberta crude had grown enough to require a substantially larger market. Edmonton had become a market for crude with the completion of Imperial's refinery, and reserves had grown to the point where Alberta could look to supplying the entire prairies.

That meant that the Alberta crude producer had to offer his crude cheaply enough to compete at Winnipeg. Alberta crude, delivered at Winnipeg, had to sell for the same price as Illinois crude at Winnipeg and so the crude producer near Edmonton had to key his selling price to the Winnipeg crude price, hence, of course, the rail freight needed to move the oil 800 miles eastward.

Obviously, this new jump to the east meant a sizable hike in freight costs for the producer to absorb, and in order to meet competition at Winnipeg, Alberta crude had to come down in price. It did, from $3.45 a barrel at Leduc to $2.90, a cut of 55¢ a barrel. Of course it also meant larger markets for the growing fields, and where production at the time of the price cut—November 1, 1948—was 38,000 barrels daily, output had moved up to around 55,000 barrels daily by the middle of 1949.

The 1948 drop in crude prices brought down Edmonton gasoline prices from 23.1¢ a gallon to 20.7¢ at wholesale. For the first time, Edmonton tank wagon prices for gasoline were as low as those at Calgary which had formerly been Alberta's lowest price centre because of nearby Turner Valley.

That 1948 price pattern, with crude oil keyed to meet competition at Winnipeg, has prevailed to the present time, and will in all likelihood continue to be the basis of prices until next spring when the oil begins to move to Sarnia. At that time, Sarnia will replace Winnipeg as the key, or fringe market, and competitive conditions at Sarnia will govern the price of crude at the fields.

Up until the pipeline opening there had only been two major influences to change wholesale gasoline prices since the end of 1948. One of those was the devaluation of the Canadian dollar in September, 1949. Devaluation meant a rise in the Canadian dollar price of competitive, imported crude at Edmonton, and a consequent rise in wellhead prices for the producer in Alberta. In Canadian dollars, Ledcor crude moved up from $2.95 to $3.20. This price prevailed until the Canadian dollar was freed from controls permitting a downward readjustment.

All other changes in prairie wholesale prices have followed the upward movement of transport costs, brought about by a series of freight rate increases totalling approximately 45% in most of the prairies.

Since 1945, compared with important parts of the cost of living, gasoline has risen least

The reductions which took place this fall were made possible by the saving in transport costs for crude out of Edmonton. Because there has been no reduction in transport right at Edmonton, the base price only reflected the change caused by the rise in foreign exchange value of the Canadian dollar. Nor was there any transport saving at Calgary, which is off the route of the new pipe line. But at Regina, whose refineries formerly had to work with crude raised in from Edmonton, the saving was substantial.

And at Winnipeg, there was also an important cut, though the autumn reduction was not as great as for Regina. By the end of October, prairie prices for regular gasoline were as follows: Edmonton, 20.7¢; Calgary, 21.5¢; Regina, 22.2¢; Winnipeg 25.7¢.

The reason for the smaller Winnipeg reduction this fall is that Winnipeg as yet does not have sufficient refining capacity to meet the needs of the Winnipeg area. Until the 10,800-barrel Imperial refinery is completed early next summer, Winnipeggers will be supplied mainly with imported products refined at Regina or in eastern Canada. Ultimately, the saving in transport costs and product prices will be greater at Winnipeg than any other prairie point.
Next year's cuts will be based on the anticipated reduction in crude prices at the wells, a reduction made necessary because the western crude producer will then be shipping to the lower lakes. To reach that point his oil will have to pay high freight costs due to the benefit of pipe line and large tankers. On arrival western crude will have to be priced low enough to compete with crude from the mid-continent fields of the United States. It all adds up to a reduction in price back at the wells. This reduction will lower the cost of crude at all the prairie refining centres, a saving which will be the basis for the 1951 price cuts to the consumer. On his side of the picture, the producer will have bigger sales to make up for the lower price at which he sells.

The 1951 cut in wellhead prices will not change the price to Ontario consumers supplied out of Sarnia refinery. The December, 1948 reduction in crude at the wells did not bring a reduction in wholesale gasoline at Winnipeg, since Winnipeg was the key market which governed the price at that time. In 1951, Sarnia will take that role.

Actually, in order to reach the lower lakes next year, the western producer will have to establish a lower well-head price than prevails in the mid-continent fields which today supply the area. He will get no more for his oil at Sarnia than the mid-continent people, but, being farther away from Sarnia, will have to pay more to move his oil there.

After the 1951 reductions, what? Will there be still further cuts in prairie prices? Will the low prices in the prairies extend farther east or farther west?

The answer hinges on three things, none of which can be predicted at the present time: the future value of the Canadian dollar; the future course of world oil prices; and the future markets found for the growing output of western oil.

1. In 1949 prairie consumers would have spent an estimated $20 millions more for petroleum products if crude from the new Alberta fields had not been available. This saving was almost entirely in Alberta and Saskatchewan but it would work out to an average of $11.95 for every man, woman and child in the three prairie provinces.

2. This year lower cost pipe line transportation extended the savings in Saskatchewan and Manitoba with an estimated total of $35 millions for the three provinces or $12.94 per capita.

3. Delivery of Alberta crude to Ontario refineries next year is expected to result in lower crude prices at the well which would permit further product price savings on the prairies. It is estimated the total will reach $55 millions or an average of $21.91 per capita.

Albert's Premier, Hon. E. C. Manning, turns the valve that starts oil flowing to Regina through the new Interprovincial line.

Pipe Line Opening

To mark the opening of the Edmonton-Regina section of Canada's first major oil pipe line, ceremonies were held by the Interprovincial Pipe Line Co. at Edmonton on Oct. 4 and at Regina on Oct. 25. At Edmonton Rl. Hon. C. D. Howe, Canada's minister of trade and commerce, described the opening as a "Canadian event of the first order", and Hon. E. C. Manning, premier of Alberta, turned the valve that started the movement of crude from Edmonton. At Regina, Hon. T. C. Douglas, premier of Saskatchewan, turned a valve that continued the flow to Regina refineries. Loren F. Kohle, Interprovincial Pipe Line Co. vice-president, (left of Mr. Manning in the above picture) was chairman at both ceremonies. Early in December the line will operate the full 1,127 miles to the Great Lakes.
In the past months Canada's oil industry has been passing through a transition period while the big interprovincial pipe line was being pushed to completion. Some of the chances which this project will bring are already beginning to be felt.

In a recent address, G. L. Stewart, president of Imperial Oil, pointed out that the problems of the next stage of western Canadian oil development will be to "discover and develop the new fields necessary to supply larger markets and to build pipe lines to those larger markets." The cost of this program would mean "minimum additional capital expenditure of 800 million and more likely of $1 billion," Mr. Stewart said, above the $500 millions which has already been spent to develop prairie crude reserves and markets.

The expenditure on exploration and development this year is running 50 per cent higher than in 1949—$150 millions against approximately $100 millions. The search has become more extensive as well as more intensive, reaching northward in Alberta, eastward into Saskatchewan and Manitoba, and westward into British Columbia.

Oil activities have been undertaken in such varied areas as the Indian Reserve at Stony Plain, Alberta, where Imperial drilling has met with some success, and in Ontario's historic Bruce County where new surveys are underway.

Statistics for the western Canadian activities at the year's three-quarter mark present a record of accomplishment. In the nine month period the industry completed 629 oil wells and 29 gas wells, most of them in existing fields. In September 127 drilling rigs were at work, an all-time record for the Canadian west. Of these 114 were in Alberta with 46 on wildcard sites and 68 drilling development wells. Ten rigs were making hole in Saskatchewan; two in British Columbia; and one in Manitoba.

Exploratory drilling by a number of companies resulted in oil discoveries in widely separated parts of Alberta. Furthest north was the showing of oil encountered at Whitelaw, 35 miles west of the town of Peace River. In the Edmonton area there were the strikes at Acheson and Stony Plain. In central Alberta there were finds at Flint near Camrose; and at Big Valley, near Stettler. A well at Spring Coulee, south of Calgary, also entered the oil picture.

More work will have to be done at all of these locations before the value of the strikes can be fully assessed. At Acheson, eight miles west of Edmonton, a 121-foot producing thickness has been encountered. This discovery, which followed closely a somewhat less exciting find a few miles to the south at Stony Plain, may be a link in the chain of major fields which appears to stretch from Leduc, running north and then east around Edmonton to Redwater.

Exploration this year would seem to have been reasonably successful but the risks and disappointments continue and the search for new fields is becoming increasingly costly as it expands into less

This map shows the 1950 Alberta discovery areas. It is too early for accurate evaluation but one or more major fields may be among these finds. Right is the Stony Plain derrick
accessible area. The industry has had its share of failures; 144 of the wells drilled in western Canada during the first nine months of the year were dry holes. Of these 108 were exploratory wells, "wildcats," scattered throughout Alberta, and the others were drilled in pools. Of the latter, 10 were at Redwater, 11 at Leduc-Woodbend, seven at Excel, two each at Golden Spike and Lloydminster and one each at Turner Valley, Stettler, Whitecourt and Gibbon.

The cost of the 144 dry holes is difficult to determine exactly but has been estimated in the neighborhood of from $75 million to $22 million.

Through the year Imperial Oil has continued to play an important part in exploration and development. In western Canada from January until the end of September the company completed 302 oil wells and one gas well, and had its share of dry holes—72, or 25 per cent, of 288 new explorations. Of the successful wells one oil and one gas might be termed formation exploration projects and 301 were development drilling near established fields. Thanks of the disappointments were exploratory wells and six were development wells.

Imperial now has 26 rigs at work in the west, five of them Company-owned and the rest on contract. Three are working at the and 23 are on development work in existing fields.

The Company's recent exploratory drilling in Alberta has been in colorful locations. Imperial Crossroads No. 1, a dry well near Fort Vermilion some 350 miles north of Edmonton, was the most northerly well ever drilled in the province. Imperial Stony Plain No. 1, 20 miles west of Edmonton, is on the reserve of the Enchoh band of Cree Indians. Imperial purchased the prospect for 140,000 acres for $100,000 for exploration rights over part of the reserve. The well has been completed and is now producing on pump.

Imperial Crossroads No. 1 was drilled at the western tip of Lac Ste. Anne, about 170 miles northwest of Edmonton, but was a dry hole. Other wildcats include Imperial Royce No. 1, being drilled in the Peace River district, some 35 miles from the B.C. border; Imperial Falher No. 1, 36 miles south of Peace River town, and Imperial Roundhill No. 1 located 42 miles southeast of Edmonton.

Long before the drills move in as the final test of exploration, the first work of careful survey must be undertaken. In western Canada the oil industry has an increased number of geophysical parties in operation documenting likely areas. In September 120 parties were reported in the field—106 in Alberta, 12 in Saskatchewan and two in Manitoba. Alberta now ranks second only to Texas in geophysical exploration activity.

To speed the search for oil in the rugged muskeg lands of northern Alberta, two surveys are being made. One of these is being financed by a joint agreement between Imperial and three other companies. In this method of exploration, a magnetometer is towed by aircraft over the areas being prospected. The magnetometer, by recording minute variations in the earth's magnetism, helps the oil seeker to locate underground structures where, perhaps, oil may be found.

Indicating the increased interest of large and small companies in the oil search, exploration permits and leases have now been obtained on more than 125 million acres of western Canada's territory. Across the west geological parties are searching for recent or older outcrops; seismic crews are drilling shot holes and setting off dynamite in them; and planes are criss-crossing northern Alberta with their towed magnetometers. Ground magnetometer and gravity-meter crews are also hard at work in many districts.

Meanwhile crude oil and natural gas production from the existing fields has been setting new records. In the week ending September 11 Alberta's production reached the high of an average 99,550 barrels daily from 1,746 wells. This was an increase of 13,253 barrels over the previous record, the week of August 21. In 1949 the record production was in the week of September 26 with 70,343 barrels daily from 990 wells.

Alta crude oil, production now has reached about 50,000 barrels a day but the wells must be operated under prorating quotas that limit the output which will increase as pipe lines open the way to wider markets. After navigation opens next spring and the oil moves to Ontario refineries, the market for Alberta oil will be raised from the current 85,000 barrels daily to 131,000 during the open navigation season.

Largest producer contributing to the week of September 11 record was the Redwater field where 48,870 barrels a day were obtained from 600 wells. Following was the Leduc-Woodbend field which during the week produced 32,307 barrels daily from 450 wells. Next came the veteran Turner Valley and Lloydminster fields, followed by Stettler, Excel, Joseph Lake, Campbell and other small fields each producing 1,000 barrels a day or less.

At present the small Joseph Lake field in central Alberta has a particular interest. Most of Alberta's oil comes from formations in what geologists call "Devonian" coral reefs or from the "Lower Cretaceous" sands. Joseph Lake is the first field to obtain commercial production from the Viking sand which underlies a vast stretch of Alberta and Saskatchewan and which, from now on, will receive increased attention from the oil seekers.

Joseph Lake is operated by a syndicate of companies under an agreement with Imperial which holds exploration rights to the area. Of the first 12 wells completed, 11 were productive and one was dry and the field has an estimated recoverable oil reserve of 7,550,000 barrels. Imperial's first production from central Alberta was in February 1947 and amounted to 151 barrels from the single Leduc discovery well. This year the company's production hit an all-time high in July. Imperial produced 1,298,889 barrels of crude or an average of 48,838 barrels daily, from 502 wells. This was more than the production of the entire Canadian oil industry before the Leduc discovery.

In the past 2 1/2 years the company has spent at least $100 millions on its expanded exploration and development program. Among the results have been the discoveries at Leduc-Woodbend, Redwater, Golden Spike, Nearwood, Excel, Woodenhead, Bon Accord and elsewhere, along with a number of natural gas discoveries.

On the other side of the company picture is a lengthy list of dry wells and the expenditure of many millions of dollars on geological and geophysical, lease and reservation costs that are written off. As one authority said: "The road to discovery and revenue pay-off is a long and hard one to travel." With the rapid growth of actual and potential oil production in western Canada, the importance of low-cost oil transportation has become even more evident. The 1,127-mile Interprovincial line, the pipe line link to Winnipeg and its new refinery, the tankers that are being built to carry Alberta oil across the Great Lakes, and other projects now under way will help to solve some of the transportation problems but there are strong indications that still further measures will have to be adopted if the full benefits of western oil are to be realized.

As the oil search broadens, seismic crews with portable rigs mounted on tractors are exploring far corners of the Canadian west.
Meanwhile the direct benefits to the west continue to grow. The western consumer of oil products is making, or will soon make, his purchases at reduced prices. Alberta is receiving large revenues from the oil development. Premier C. E. Manning predicted recently that provincial revenues of $96 millions would be received from oil during the current fiscal year. Oil revenue already has been used to reduce Alberta's public debt by $36 millions.

Paralleling the oil activities in western Canada, exploration is continuing in Ontario although on a relatively small scale. Ontario's newest oil interest centres around the Bruce Peninsula between Lake Huron and Georgian Bay where Imperial has taken options on 15,000 acres. A geological survey is being made, but whether or not any drilling is done will depend on the geologists' findings. Exploration was conducted in the area at the turn of the century when some 25 wells were drilled around Hepworth near the base of the peninsula and other wells were sunk farther north. The Hepworth drilling found gas but no oil but the others had some showings of both gas and oil.

Meanwhile Imperial is proceeding with its re-survey of Canada's pioneer oil field in southwestern Ontario. In the first nine months of this year 28 holes were drilled in this area. Of these 19 were dry holes. Four came in gas wells and five produced oil. With these additions, Imperial's southwestern Ontario fields now have 39 oil wells and 13 gas wells.

Quebec now has increased transportation facilities for the oil that must continue to be imported into Canada. The 236-mile pipe line from Portland, Maine, to Montreal has been enlarged at a cost of some $15 millions. The line was built during World War II so that ocean tankers could deliver their cargoes of crude for Canada at Portland and save the long and at that time hazardous haul around the Gaspé Peninsula and up the St. Lawrence. The original capacity of the line was 60,000 barrels a day. Now a new 18-inch line has been laid beside the original 12-inch pipe and the maximum capacity of the two lines will be 137,000 barrels daily.

All these activities, both in the east and in the west, are combining to supply Canada with greater quantities of the oil needed by our homes, our industries, and our transportation systems. As 1950 draws to its close a period of transition and accomplishment is being rounded out that will help to change and strengthen the country's economy.

In constructing the interprovincial pipe line, the South Saskatchewan river crossing (below) was a difficult engineering project.

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**Executive Changes**

**H. H. Hewston, Now a Director of Standard Oil (N.J.), Resigns as Chairman of the Board of Imperial Oil Ltd.**

H. H. Hewston, who was president of Imperial Oil from 1945 to 1949 and then chairman of the board of directors, recently resigned as board chairman and director following his election as a director of Standard Oil Co. (N.J.). Mr. Hewston began his career in the oil industry at Imperial's Sarnia refinery upon his demobilization from the R.A.F. after World War II. Later he served with various companies in the U.S. and South America returning to Imperial at Toronto in 1935. In 1938 he was named head of the Company's marketing department. Two years later he was elected a director and a vice-president and, in 1945, became president following the death of H. V. LeSueur. During his term as president, Imperial made major oil discoveries at Leduc, Redwater, Golden Spike and elsewhere which have changed the entire Canadian petroleum industry. Mr. Hewston became chairman of the Imperial Oil board in 1949 and was elected a director of Standard Oil (N.J.) last spring.

**J. R. White Appointed Executive Vice-President of Imperial**

J. R. White, a director and vice-president of Imperial Oil since 1946, was recently appointed executive vice-president. A native of London, Ont., Mr. White has had wide experience in many phases of the oil industry. He graduated from the University of Toronto in 1931 with a B. Sc. degree in mechanical engineering. Two years later he joined the company as a draughtsman and engineer at Sarnia refinery. In 1937 he went to the United States for special studies in manufacturing co-ordination. The following year he joined the Standard Oil Co. of Venezuela (later a part of Creole Petroleum Corp.) and became a vice-president of that company in 1942. He returned to the United States early in 1944 and was engaged in producing work in an administrative capacity before rejoining Imperial Oil in the same year as economic co-ordinator. He was elected a director in April, 1945, and in October of that year was appointed vice-president.

**W. O. Twelvetts Elected a Director**

W. O. Twelvetts has been elected a director of the Company. He was born in Galt and educated in Sarnia and Toronto, graduating in 1933 from the University of Toronto with a bachelor of commerce degree. He joined the manufacturing department at Sarnia the same year and after experience in the various refinery departments became production controller in 1946. In 1945 he was transferred to Toronto as assistant economic co-ordinator and in 1947 was appointed manager of the co-ordination and economics department. In 1949 he moved to Calgary as management assistant in the producing department, western division.
Canadians Build

Two ships are being completed at Port Arthur and Collingwood to carry Alberta crude oil. The 620-foot Imperial Redwater (under construction, right) supersedes the 604-foot Donnacona as largest ship built at Port Arthur.

Biggest Lake Tankers

The new 620-foot Imperial Leda at Collingwood, and the Imperial Redwater at Port Arthur mean that the largest freshwater tankers in the world are well on their way toward completion. During the winter they will be fitted with the thousand and one pieces of equipment and furniture which the crews will need to work the ships and to live aboard them.

Next spring they will head out from the ports which gave them birth, out into the lakes for trial runs. With the trials once passed, they will begin the job for which they were designed—hauling crude oil from Superior, Wis., terminus of the 1,127-mile Redwater-Lake Superior pipe line, to Ontario refineries.

The 620-foot tankers are the largest ever built in a Canadian shipyard; their 13-knot speed will enable them to load at Superior, unload at Sarnia and return to Superior in five days. Capacity of each ship, at the maximum draft allowed in the channels, is 115,000 barrels. Equipment at the Superior terminal will load them at the rate of 20,000 barrels an hour and the ships themselves will have pumps which can deliver 15,000 barrels an hour to shore terminals. Imperial’s Sarnia refinery is already preparing for the arrival of Alberta crude. Twenty new storage tanks with a capacity of three million barrels have been built there.

Cost of the two tankers will be nearly $8 million. They are being built by Pipe Line Tankers Ltd., and Imperial Oil will charter them for a 15-year period. Crews’ quarters have received special attention on the ships. Not more than two men will share a stateroom and recreation rooms for officers and men are in the plans.

Fire-fighting materials are being used throughout the quarters and modern fire-fighting equipment includes carbon dioxide and steam extinguishing systems as well as portable extinguishers placed throughout the ship.

Nearly all the material in the ships is to be Canadian-made. Steel for the hulls came from Hamilton; the 4,500-horsepower engines from Toronto; boilers from St. Catharines. Furnishings will be entirely Canadian-made.

Because Imperial Leda and Imperial Redwater are sister ships, the draughting room at Collingwood shipyards made drawings for both. Here draughtsmen George Cawley, Tom Ridding and Harold Gordon study a hull model.
From Blueprint to Steel

A new ship first sails in the brain of its designer. The Imperial Leduc and Imperial Redwater were conceived by Peter Duncan as he worked at his desk in Imperial Oil’s marine department. He knew the job which the tankers would perform, knew that large carrying capacity and speed were essential. The breadth of a hull on the Great Lakes is fixed by the width of the building berth; the length by good design and by the job which the ship will do.

From Duncan’s ideas models were made and tested in a towing tank. From these models came hundreds of figures and blueprints needed for translating the tiny model into the great bulk of frames and bulkheads, decks and bilges, galleys and pump rooms which make up the modern tankers. The translation from blueprint to actuality began in March, when the shipyards laid the keels.

In the mold loft at Port Arthur glass of the ship were translated by labor into wooden patterns (templates) from which the hull steel was cut.

Putting a ship together demands the special skills of many hands and brains. Alva Atkins is a veteran shipwright at Collingwood.

An automatic welding machine, operated by Roy Soderholm, is used to join plates on the main deck of the Imperial Redwater. The surplus welding metal is picked up through a vacuum hose.

The torches used to cut steel plates in a shipyard burn many thousands of cubic feet of acetylene and oxygen. At Collingwood the bank of oxygen tanks holds the shipyard’s supply.

While the hulls grew other parts of the tankers were being built. This wooden pattern being measured by foreman Thomas Pether will be a model for a special main steam line fitting.

In the machine shop at Collingwood a powerful $16,000 drill bite into an auxiliary manifold to make bolt holes. Mechanic Carl Thomas is a veteran who has had 25 years experience.
The Big Job of Assembly

Brooks launching burners, welders, cranesmen, blacksmiths, machinists, mold loftmen and all the other specialists a shipyard employs combined their skills to fabricate the great hulls. Launching—always a spectacular point in a ship's career—required special precautions because the hulks into which the hulls slipped were only 28 to 30 feet wider than the hulks themselves. The work was well done: the Imperial Macedon was launched successfully at Collingwood on Nov. 4 and two weeks later the Imperial Redoubt was afloat at Port Arthur.

With the hulls safely launched, installation of engines, boilers, pumps, fire-fighting equipment, furnishings and navigation aids such as radar, gyrocompass, fathometers, ship-to-shore radio telephones and direction finders can proceed throughout the winter. Next spring the first fires will be lit under the boilers and the ships will turn their engines over in dock trials. When all is in order the crews will cast off and the ships will head for open waters and the trials which will test all their equipment.

A template, fitted into an open section of the hull, will become an exact pattern for a ready-to-install steel plate.

Lorne Hutchinson and Percy Deacon put finishing touches to a collardem, a watertight compartment between two bulkheads.

Many hull sections are prefabricated in the yard and later bolted into position. These are web frames for wing tanks.

Prefabricated at the other end of the yard, this fourteen-ton steel section is picked up from a flat car by a big crane.

The Imperial Macedon's stem is a curving piece of steel. It will cut the water as the tanker sails the Great Lakes on her test of bringing Alberta oil to refineries in Ontario.

This massive shape of steel, weighing 11 tons, is the bottom part of the Imperial Macedon's stern frame. Its ruggedness is needed to bear the weight of the big tanker's large rudder.

Building the world's largest freshwater tankers is employing hundreds of workmen at Collingwood and Port Arthur. Here some of them leave the yard as the "quitting whistle" blows.
1950 Imperial Oil Scholarships

EIGHT Imperial Oil scholarships, each of which has a value of $2,000 over a four year period, have been awarded for 1950 to a group of young men and women who are beginning their studies at various Canadian universities. The scholarships are offered annually on a regional basis and are open to qualified graduates of secondary schools who are children or wards of employees, annuitants, or of deceased employees of Imperial Oil and its subsidiary companies. Each scholarship is worth $500 a year and may be held for four years.

This year’s winners are: Marian Constance Crickmay, daughter of Dr. C. H. Crickmay, producing department, Calgary; Bernadine Lenore Jeffrey, daughter of D. K. Jeffrey, manufacturing department, Edmonton; John Douglas Blackwood, son of John Blackwood, Manitoba marketing division, Brandon; William Mark Jacques, son of John E. Jacques, Sarnia refinery; Marjorie Louise Kent, daughter of George E. Kent, manufacturing department, Toronto; Barbara Eunice Knight, daughter of B. F. Knight, refinery sales department, Toronto; Lilistin May Lancaster, daughter of Arthur W. Lancaster, comptroller’s department, Toronto; Roger LaFontaine, son of Alphonse LaFontaine, Montreal East refinery.

 Winners were decided by a committee composed of: Dr. E. Holt Gurney, former chairman of the Ontario Research Foundation; Dr. J. J. O’Neill, dean of the faculty of engineering, McGill University; Dr. Leon Lortie, Institute of Chemistry, University of Montreal; Dr. J. N. Finlayson, formerly dean of the faculty of applied sciences, University of British Columbia; and Professor J. C. Cameron, head of the department of industrial relations, Queen’s University.

The same committee selected the 1950 Imperial Oil fellowship winners described below.

1950 Imperial Oil Fellowships

T H E F I N A N C I A L grant to each winner of an Imperial Oil fellowship has been raised from $1,000 to $1,250 per year. Because the fellowships may be held for three years, the total value of each award is now $3,750. This 25 per cent increase was made because many of the winners are either married with dependents, or are completing postgraduate studies in the United States where the cost of living is usually higher. All those now holding Imperial Oil fellowships, including the 1948, 1949 and 1950 recipients, will receive the additional grant.

Winners of Imperial Oil fellowships for 1950 are: Peter Coles Badgley, of Westmount, Que., for research in geology; Roger Charrier, of Sherbrooke, Que., for research in the field of industrial relations; David Barry Harper, of Victoria, B.C., for research in engineering; and Jacques Marcel Bonneville, of Hull, Que., for research in engineering.

Imperial Oil fellowships are designed to encourage postgraduate scientific research. Four fellowships are awarded annually to qualified graduates of Canadian universities. The winners are in no way obligated to the Company and the subject of research is a matter of arrangement between the successful candidate and the university he plans to attend.

A former pilot in the R.C.A.F., Mr. Badgley is a McGill University graduate. While an undergraduate, he was awarded the Sir William MacDonald scholarship and the Logan Gold Medal in geology. During the summer holidays he worked as a field geologist in various parts of Canada from Quebec to the Yukon. In 1948 he graduated with first class honors in geology, receiving a B.Sc. degree. Since graduation he has been studying petroleum geology in the graduate school at Princeton and he recently received his master’s degree. He will use his fellowship to investigate sedimentary formations of the earth’s structures.

Mr. Charrier was nominated by Laval University. An arts graduate of the College St. Charles Borromeo, Sherbrooke, he received an M.S. degree in literature from the University of Laval. While a student at Laval he also was a reporter for two Quebec newspapers, Le Tribune de Sherbrooke and Le Soleil, Quebec. Last year he won an annual award offered by the Brazilian government and spent six months studying industrial and social conditions in that country. He is proceeding to a doctor’s degree in social sciences.

Mr. Harper was a member of the 1950 graduating class at the University of British Columbia. During World War II, he was a navigator with the R.C.A.F. Later he was employed in the general engineering department of the B.C. Electric Railway Co. While an undergraduate, Mr. Harper won the Walter Moberly memorial prize for an essay on the gas turbine. He is proceeding to a M.Sc. degree and will use his fellowship in research on gas turbine development for other than aircraft purposes.

Mr. Bonneville was nominated by McGill University. During World War II, he served with the Canadian Army in England and on the Continent. He entered McGill University after the war and graduated this year in mechanical engineering. While an undergraduate he held university scholarships and also won the Roy M. Wolvin scholarship for general proficiency. He will use his fellowship to carry out research in gas dynamics.

In awarding the fellowships the selection committee under the chairmanship of Dr. E. Holt Gurney reviewed the qualifications of candidates nominated by eight Canadian universities.

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In the yards and in the main line, in the cabs and in the roundhouses, there’s a big change as the railways switch to oil

The Conversion of Casey Jones

The oil developments in Canada’s west have a twofold impact on railroading, one of the nation’s biggest, most widespread and most vital industries. Largely because the western fields now give assurance for the first time of an adequate and continuing supply of oil products from a Canadian source, this country’s railways have embarked on a “double” program of conversion to oil.

The long term program calls for the application of diesel-electric locomotives to railroad use. Since, however, this program will inevitably take a long time, an immediate step involving the conversion of standard steam locomotives to oil-burners has also been undertaken.

For the moment, at least, the conversion of steam locomotives will be confined mainly to the west where the necessary fuel will be available on the spot and where both CPR and CNR already have had a long history of successful operation with oil-burners. For many years both railroads and CNR already have had a long history of successful operation with oil-burners. For many years both railroads have used oil as fuel on some British Columbia lines to avoid forest fires but it is only recently that the roads decided to convert, where practicable, to oil on other runs.

Developments of the past three years will permit most of the B.C. trains to operate on Canadian oil and the operations are being extended to the prairies. Later, following the growth of supply of the required fuel, oil-burning locomotives may become common in other parts of the country.

Canada’s newest province, too, is converting to oil-burning trains. The CNR, now operating the Newfoundland Railway, has 36 oil burning locomotives and only nine coal burners on the Island lines. The change has been proceeding rapidly since the Confederation: at the end of last year there were 26 oil burners and 19 coal burners. The Island has three diesel electric switchers.

Under the CNR’s present program the oil-burners will operate in all of British Columbia, most of Alberta and as far east as Biggar, Saskatchewan. Before the current conversion began the CNR had 88 oil-burners in B.C.; when it is complete there will be about 300 operating in the west.

The CPR’s conversion program has been completed and the line now has 264 oil burners working in the west. Most of the engines are for use in southern B.C. and in Alberta, between Calgary and Edmonton. The other 36 are passenger locomotives assigned to the main line between Winnipeg and Calgary. Completion of the conversion means that all Canadian Pacific passenger power between these two points is oil-burning and it also means that it is now possible for passengers to travel on CPR oil-burning trains from Winnipeg to the Pacific coast.

Mechanical changes involved in converting a steam locomotive to oil are not unduly complex. Briefly, the main steps are the removal of the coal stoker, cinder-catcher devices and other coal and ash handling equipment; the remodelling of the firebox, including lining it with firebrick; and the addition of oil-burner, oil tank and filter system.

The fuel used is the petroleum product known as “Bunker C.” It consists of what is left of crude oil after the lighter products have been distilled off. “Bunker C” has several easily apparent advantages as a locomotive fuel. It is estimated that, taking account of the fact that fuel losses when burning oil are small, one pound of oil has as much heating value as one and three-quarters to two pounds of coal. There are no cinders or ashes to handle. More complete combustion gives higher boiler efficiency and boiler tubes last longer. Railways need fewer men for the job of keeping their fueling stations supplied. In 63 it is a highly important advantage that the danger of fires from sparks on railway or other property is largely overcome.

All these factors add up to increased efficiency and savings for the railways. Passengers, crewmen and the general public all appreciate the absence of cinders and black smoke and both passengers and railroad company budgets benefit from the reduction in the number of fueling stops.

The changeover to operating an oil-burner affects the fireman more than the engineer. The latter’s job stays much as it was in a coal-burning engine. The fireman’s job on an oil-burner involves less physical effort than it did when he was handling coal but he must pay considerable more thorough attention to details of operation. He must always be sure that his fuel supply is at correct pre-heat temperature in the tender oil tank; he must co-ordinate the amount of fuel supplied to the burner in the firebox with the amount of air admitted to the damper, and he must see that the steam atomizer valve, which breaks up the oil at the burner into a fine spray, is always set at correct pressure.

The net effect of this is that the fireman must be on his toes every minute, watching the opening and closing of the throttle under the engineer’s hand and adjusting his valves accordingly. The phrase “on his toes” should not be taken literally, however. In the new oil-burners the fireman sits down to his work.

Further programs of conversion to oil are in prospect. Both of Canada’s major railways are convinced that the economies effected, together with higher efficiency of oil-burning locomotives, will benefit not only the railways themselves but also all Canadians.

Both major Canadian railroads have announced that they have purchased their last steam locomotives. This, in effect, means that they are committed to a long-term program of dieselization although there is a possibility that gas-turbine locomotives, on which a great deal of development work is being done, will also enter the picture.

The phrase “long term program” is used with good reason; dieselization will cost the CPR and CNR systems upwards of $2 billion in original capital outlay and, obviously, that amount of money cannot be invested in new locomotive power in a great rush, even if builders could supply the equipment in a hurry. Added to this, of course, is the fact that both
roads now own and operate a great number of steam locomotives which are among the best in the world and which will continue to give good service for many, many years. Some of them undoubtedly will be converted to oil burners during their life span but many others will run through the rest of their working days burning coal as they were first designed to do. Inevitably, then, complete dieselization is a long way off.

This doesn't mean, though, that dieselization is off to a slow start in Canada; the railroads are rapidly extending their experimental operation of switchers to main line operation and have placed orders for a substantial amount of diesel-electric locomotive equipment.

One interesting part of Canada's developing diesel story is that the two big coastal islands, Vancouver Island and Prince Edward Island, are the main points of diesel concentration in the country. The CPR's Esquimalt and Nanaimo line on Vancouver Island is completely dieselized with 13 road switchers and the CNR's Prince Edward Island operation also has been converted.

In total there are more than 360 diesels at work in Canada now. The CPR operates 96 switchers in main yards across the country and 17 road freight units and three road passenger units on the Montreal-Wells River portion of the Montreal-Boston run. These are in addition to the road-switchers on the Esquimalt and Nanaimo line. The two railways have ordered a further four switchers and 54 road freight units on order for its Algoma District. These locomotives are being put into service between Fort William and Cartier in northern Ontario as they are delivered.

The CNR has an almost equal number of diesels, most of them switchers, operating in Canada with as much more running on the CNR as on the CPR. This road also has further diesel-electric equipment on order. Both railroads have, of necessity, bought their diesels in the United States until recently, but now there are two diesel building plants in production in Canada and another expects to begin producing diesels when present road rolling stock production programs have been completed.

Part of Canada's new diesel-electric locomotive industry is in Montreal where Montreal Locomotive Works, in partnership with Canadian General Electric Co. and Dominion Engineering Co., has turned out more than 200 switchers and road units. MLW has made steam locomotives for almost 50 years but already in the three years since the company started changing over to diesels its production program has altered to the point where virtually all of its facilities are devoted to diesels. Steam locomotives are still an important part of the company's output but all of them are now for the export field.

Immediately after the war the railways' trend toward diesels became apparent in the United States, and discussions between locomotive makers and railroad operators in Canada convinced MLW officials that this country was also ready to follow the same line of progress as quickly as was practicable. As a result MLW made an agreement with CIE for the supply of electrical components for diesel locomotives. CIE is now building generators, traction motors and other equipment. Another agreement was made with Dominion Engineering for the supply of 1,000 horsepower diesel engines for switchers and 1,500 horsepower engines for road freight and road switching locomotives.

Together, the three companies now have a $15 million contract in the new industry. And, working together, they are turning out diesel units for both the large Canadian railroads as well as for private industrial lines. Production at MLW has followed its logical course, and in quick time. The first production line unit, a switcher, was delivered in February of 1948. Others followed until by the end of the first year 75 such units were in service with Canadian railways.

The next step, the manufacture of the bigger road switcher, was well established before the end of 1949 when delivery of the first units reached this country. And in the first month of this year the production schedule was rolling along in still another department as the first made-in-Canada streamlined road freight locomotive was delivered to the CNR. Seven more of the same design are on order for the CNR and 86 others for the CPR, half of them "A" units and half "B" units.

A diesel "A" unit is a locomotive with cab and controls for the engineer; "B" units do not have cabs and cannot be operated by themselves as locomotives. Combinations of the two types bring valuable flexibility to railroading. Horsepower on any hauling job may readily be varied according to terrain and traffic conditions. An "A" unit may be operated by itself or in combination with two or more "B" units. Or two "A" units may be operated together.

The second Canadian diesel manufacturing company, General Motors Diesel Ltd., began producing in midsummer this year. A plant providing over a quarter of a million feet of floor space was built at London, Ontario, at a cost of about $5 million. It is expected that production will reach about 280 units a year, nearly one every working day. About a thousand men are employed at the London plant and where the diesel-electric locomotives are built "from the trucks up."

The fact that the GM diesel company builds its locomotives completely in its own plant does not mean that the economic benefits arising from this expansion of the new industry will be confined to a single community. The company has sought out Canadian manufacturers who will be able to supply components for the engines. In fact, Ontario Premi- ning and Development Minister William Grosinger has already stated that his department estimates that more than 20 Ontario municipalities will benefit by work for their local industries.

All in all it appears that just about every Canadian will reap some benefit from dieselization of the railroads. The roads themselves can, if past performance in other countries and in their own experience is any gauge, look forward to a saving of approximately 60 per cent in fuel costs and 40 per cent in maintenance costs. At the same time dieselization will mean fewer delays, smoother riding, elimination of smoke and cinders, elimination of fire hazard in forest areas and improved working conditions. There's an advantage there for everybody, railroad operators, crewmen, passengers and the public at large.

All those advantages, of course, are advantages through operation. Equally important are the benefits arising from the growth of the new manufacturing business. The GM plant and the plants of the three partner companies making diesels in Montreal will employ several thousand people. Other thousands will be working for suppliers. They have a big job to do. The first big "grower" in the new "big grower" are coming from Canadian plants at the rate of almost two a day, as they will be before this year is out, it's going to take a bit of people a long time to do it.

A L-390 p.h. switcher made by the Montreal Locomotive Works for the Rivière-du-Loup Subdivision (Hull Limited of Alcan) is inspected as it leaves the plant shop.

A giant crane hooks and moves a L-190 diesel passenger locomotive at the General Motors Diesel plant in London, Ont. The multi-million dollar factory began operations this year.

Diedel-engineered freight locomotives powered by oil are being used in increasing numbers for Canada's long transportation hauls. They are powerful and well and used on maintenance

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Pipe Line to Winnipeg

While crops ripened nearby, pipe-laying crews pushed along the narrow path of the new transportation link that will carry Alberta crude for Manitoba

Through the late summer and autumn a succession of complex machines forged northward across the prairie from Greta on the Manitoba-U.S. border toward Winnipeg. The procession included huge mechanical trench diggers, sturdy catapiller tractors and compact and ingenious priming, coaling and wrapping machines.

These machines were hard at work laying the Winnipeg pipe line. Construction of this important oil artery to serve the people of Manitoba began in July and was completed in December. Until the pumphouse at Greta is completed temporary facilities are providing power for moving the oil.

The Winnipeg line is a much smaller project than the Interprovincial Pipe Line Co.'s 1,127-mile Edmonton-Moncton pipeline. But the 75-mile Manitoba undertaking involved many of the same planning, engineering and construction problems encountered by the bigger line.

In a number of ways the Interprovincial and Winnipeg lines are similar. Both are the result of the western oil development set in motion by the Ledcor discovery; both had to be speedily constructed so as to move western oil to new markets at the earliest time possible.

Both lines will distribute the benefits of the Alberta discoveries to wider areas of Canada, overcoming the distance problems that have handicapped the western fields and at the same time they will assure domestic, agricultural and industrial consumers of a continuous supply of Canadian petroleum.

But there are as many differences as there are similarities between the two lines. For instance the Interprovincial using 20, 18 and 16-inch steel pipe spans three provinces to draw crude from the Alberta fields at the rate of 80,000 barrels a day. It is owned by a company in which Imperial has a minority interest, and it cost $80 million.

The Winnipeg line will deliver part of Interprovincial's flow by means of 10-inch pipe at a rate that will reach 14,000 barrels a day next year, but with additional pumping equipment it will be able to carry up to 30,000 barrels daily if required. This line cost $2.5 million and is owned by Winnipeg Pipe Line Company, Limited, a Manitoba subsidiary of Imperial Oil. Crude for the line is supplied from a take-off point on the Interprovincial line at Greta where both companies will maintain pumping stations.

From Greta the line follows a fairly straight northbound course, passing close to the prairie towns of Altona and Rosenfeld. It crosses the Morris River, near Morris, veering northeast toward Ste. Agathe until it reaches the Red River which it crosses at St. Adolphe. From there on, the line continues on the east side of the Red, passing through Transcona, a suburb of Winnipeg.

The line terminates near Imperial's new refinery, construction of which is well-advanced, on a site in the municipalities of East St. Paul, seven miles north of downtown Winnipeg. When this $10 million refinery goes on stream next year it will be supplied with Alberta crude from fields nearly 900 pipe line miles away. In addition the line supplies the North Star refinery at Winnipeg through a 3½ mile take-off of the main pipeline.

The route, which was surveyed earlier in the year, crosses seven provincial trunk roads, 10 secondary roads and 12 railway lines. Each crossing was bored and 16-inch casing inserted through which the 10-inch line passes. In many instances the main trunk roads have drainage ditches on each side, some of them nearly 100 feet wide. Here pipe was buried under the ditches. Every effort was made by the pipe line workers to avoid interrupting traffic. Where interruptions were unavoidable, the work was speeded up and delays were cut to a minimum.

A constant problem was the wet soil—an understandable condition because the line cut across land that was for weeks under "Lake Morris" during the Manitoba flood. Also, the route is seldom far from the Red River or some of its tributaries.

Because of the dampness the mechanical trench diggers which were originally rigged to handle loose dirt had to be converted to deal with heavy soil and mud. In the early stages the utility maintenance crews had to work 24 hours a day adjusting machines and "cleaning out the hogs".

At Greta, Interprovincial put down a number of 40-foot wooden test piles. The ground proved to be so soft that 300 piles were required for their pump house foundation. Winnipeg Pipe Line engineers are being guided by this experience in constructing their pump house.

Long before work on the line began, in fact while the route was being studied and mapped from aerial photographs, orders for some 6,000 tons of steel pipe were placed with a Glasgow, Scotland, steel mill. By May, shipments of the pipe were being unloaded at Montreal. Within a couple of months the full order had been delivered.

From the Montreal dockside the pipe was moved by rail 1,500 miles inland and stacked at railway stations close to the route. Later tractor trucks with long trailers strung out the pipe, which came in 30 to 35 foot lengths, along the route to be ready for the welders who joined it into a continuous tube.

In July while surveyors were staking out the right-of-way machines arrived at Greta and nearby Altona to dig the 75-mile trench that holds the line and to prime, coat and wrap the pipe. Many of the 150 pipe line workers, most of whom were from the area, were on hand to ready the machines. Pipe laying operations put underway on July 30.

In the beginning, because of the heavy soil, progress was slow. Then, with ditching machines working round the clock, pipe was put down at an average speed of one mile a day. Now Alberta crude is flowing through the underground pipe to the limits of Manitoba refining capacity now operating. When, next summer, the capacity is enlarged by the new Winnipeg refinery the full benefits of western Canada's great oil fields will be enjoyed in Manitoba. The Winnipeg Pipe Line which only a few short months ago was in the blue print stage is an accomplished fact and takes its place in Canada's growing oil transportation system.

Wooden 40-foot piles were put down as a foundation for the pipe line's pumping station at Greta. The line will start to deliver 14,000 barrels daily; capacity is 30,000 barrels.

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Schoonerman, O.B.E.

Capt. Josh Winsor is skipper of the little ship that performs trouble-shooting jobs for the Newfoundland fishing fleet.

"Captain Joe" (as he is known) is a man with shrewd blue eyes that are a little furred at the edges from looking into many Labrador suns and facing many Labrador winds. His manner is as unassuming as if he didn't have an O.B.E. to his name, and he could scarcely look less like a captain. There is no natty, navy blue uniform, no peaked cap or gold braid of a ship's officer. He looks—and Newfoundland schooners love him for it—like one of themselves as, in fact, he was before 1938 when his Winifred Lee became a ship in a unique service.

On a coast that is a labyrinth of islets, bays and hungry, lashing seas, his job is, in his own words, "to call every place there is a schooner, and to carry everything from an anchor to a needle."

It is no understatement. He has taken aboard chickens for the Moravian mission at Nain, piano for bleak little "settlements" of two or three houses, extra gear and clothing for fishermen, pencillin for their injuries and dental forceps for the extraction of their missing teeth. He has also taken north barrels of clothing for the native population and sometimes the Eskimos themselves.

The Lee drops anchor in pretty harbours like Nain with its red-roofed buildings, in bleak harbours like Hbron, and in no harbours at all, like Saglek Bay where the "Thorupika" near three or four thousand feet in the air and a man looking from the wheelhouse window cannot see their towering summits.

Here and there, the tip of a schooner mast comes in sight above a rocky bluff, poking out like a dry, gray twig. Capt. Winsor gives a casual glance.

"There's the Maxner," he'll say, although the ship is about as visible as the Big Dipper at high noon... or "Willy's just coming in..." or, perhaps, "Good, there's Captain Blackwood. We've mail for him."

Sure enough, barely outlined in the fog that often clings to the Labrador coast with the persistence of a barnacle, there is the wraith of a schooner and, sure enough, it is the Maxner or Willy or Captain Blackwood! All he needs to see is the slant of a mast or the shape of a prow.

The weathered anchor of the Lee scarcely splashes into the water before small boats are appearing out of nowhere and heading for her.

The first question is called across the water and it's always the same—"Here's the fishing?"

The information is ready—how many quintals of cod have been taken by the schooners at the Farmyards, or Newfoundland Harbor, or Queen's Lakes. The crew knows where on the coast the fishing has been good, where the cod are not running so well, what boat is where, who is on board and who has bad news from home and if it is good or bad.

Last summer, the Episcopus had been fishing at Newfoundland Harbor near Davis Inlet. The men, out in small dories all morning, returned to their ship to find nothing left of her but a most rocking drunkenly above the water and their cook, only man left on board, floating about in a open dory. Supplies, extra clothing, food and 400 barrels of cod had all been lost.

The Winifred Lee arrived next day, and the shipwrecked men came alongside in their small boat, naked shock on their faces, just one, wiseful, habit-bred question on their lips—"How's the fishing?"

Captain Joshua told them at great length, and meanwhile all the fresh bread in the Lee's galley, tea, coffee, sugar, oil for the dory's motor and the captain's own supply of tobacco were being lowered quietly over the side. The salvaged nets were taken on board, and the fishermen, outfitted for the trip to Hopedale, set off south under their own steam. The Lee turned north again.

The Winifred Lee is essentially a man's boat—a fishing man's. She is probably the only vessel in the world whose officers, owner, skipper, doctor and crew, may all clamber over the sides to help split, gut or salt codfish on a nearby fishing schooner in a harbor wrapped in a cocoon of fog. The pigmy-sized little ex-schooner promises to pit its strength against the coast itself to serve the schooners.

Labrador fishing begins in July, after the ice has left the coast, and continues until October. About
500 Labrador settlers are joined by some 1,100 fishermen from Newfoundland during the season. The settlers usually fish from the shore in small gasoline-engined motor boats, but the Newfoundlanders use both shore bateau and also fish from schooners. The shore fishermen are known as “stationers” and the schooners as “floaters.”

Imperial aids this fishery by supplying gasoline, oil and grease for the motor boats and diesel oil for the 150 schooners. Each schooner has two or three small motor boats. Ashore, kerosene lamps light the fishermen’s homes and their stages, or fishing rooms, where the fish are gutted, washed and salted.

Supplies are moved in barrels, which are picked up at Imperial’s marine bulk plant at Lewisporte, Ndl., or St. John’s. The schooners go to Labrador to carry, on deck, enough fuel to last them for the season.

Captain Winsor’s Winifred Lee, on each of her three-masted gigs, takes a 150-barrel deck load of petroleum products. The cargo is mainly fisherman’s gasoline, for coastal settlements.

The Lee’s service began with a petition from the fishermen who set out from Newfoundland each summer to fish “on the Labrador”. Those who went north of Hopedale, and the scheduled run of the government steamer and supply ship, had no company but their own, no word of home, no mail, supplies, medical aid or source of it in case of emergency.

Three brothers came originally from Devonshire, England—a fact still evident in the broad, English accent of Joshua Winsor. One of them, David Winsor, settled in what is now Winsor’s Harbor, Newfoundland. In those days, it took courage to go even to the Grand Bank to fish, but to go north instead, to an uncharted Labrador, was enough to label a man forever a fool. Yet go north he did— to become the first man ever to set a cod trap in La
dador. This was Capt. Josh’s grandfather.

Following the same sea-going tradition, young Joshua made his first trip to Labrador when he was 10 years old. He was skipper of a fishing vessel at the age of 19—one of the youngest skippers on the coast—and he held the position of ship’s master for 40 years after that without a break. For his work in Labrador, he received the O.B.E. six years ago.

He doesn’t talk much about the hero. If you mention it, there is a mildly pleased twinkle in his eye, a slightly embarrassed shrug of the shoulders.

“Oh yes, that’s right,” he’ll admit. “Now, d’you see that berg over there?” And he’ll be picking up the field glasses for a better inspection of the iceberg on the horizon before passing them over to his son Ern, who today is the second captain on the bridge.

Earl as a boy served his apprenticeship on his father’s boat. Later, he became first class wireless operator on the ill-fated Caribou—and was serving on her the last trip before she was sunk by Nazi submarine in Cabot Strait. Now he’s back on the Lee, a captain in his own right, having succeeded his father as “skipper” two years ago. “Captain Josh” remains the owner of the government-chartered ship.

Labradorians spend some time in good-natured ground when the Lee fails to turn up when they expect her. (Actually, she has only one definite port to make on schedule—Hopedale every two weeks to connect with the Kyle, government supply ship that serves the coast between Hopedale and the Straits of Belle Isle in the north.) They grouned too when, one spring, after a long, cold winter, the Lee brought them sugar seasoned with salt, half-burned mail and ruined clothing. Spontaneous combustion had started a fire in her hold just off Twillingate, and the sea water used to douse it and save the Lee had also doused supplies and mail.

Still, under their grumming, the people of Labrador know how bleak life would be on the coast with out this boat that has become, in every sense of the word, the lifeline of the north.

The Lee is a welcome visitor at isolated settlements along Newfoundland’s coast. This habor is at Odeira, Placentia Bay.
Retirements
Hartley R. Knowles, Assistant General Manager, Marketing
Hartley R. Knowles, Imperial’s assistant general manager, marketing, for the past three years, retired recently after 40 years’ service with the Company. Born in Henepin, Ont., he joined Imperial as a salesman in Saskatoon in 1909. In 1915 he moved to Toronto for special service station work and in 1921 he was transferred to Winnipeg as city agent. He subsequently became assistant manager of southern Saskatchewan division; the first superintendent of eastern Ontario division; and then general supervisor of service stations. In 1938 he was named operations manager for Canada and Newfoundland, and in 1943 became vice-president and assistant to the vice-president on marketing. He was made regional sales manager for western Canada in 1945, and became assistant general manager, marketing, in 1947.

S. R. Stevens, Manager, Crude Oil Department (Western)
S. R. Stevens before his recent retirement had been associated with Imperial’s western operations for more than a quarter of a century. Born in Guelph, Ont., he joined the Company in 1910 as a salesman in Saskatchewan. Four years later he was appointed manager of the south Alberta division. In 1937, when north and south Alberta divisions were merged, he was appointed manager of the Imperial Canadian division. He also directed marketing activities in the Northwest Territories and the northwestern section of British Columbia. He became manager of the crude oil department in 1947.

C. D. Dean, Comptroller of Taxation
C. D. Dean retired recently after 40 years’ service with the Company. Born in Douro, Ont., Mr. Dean graduated from the University of Toronto in 1910 and joined Imperial in the engineering department at Sarnia. In 1916 he transferred to Toronto for a special economic analysis of the Company’s overall operations. He devised safety features for loading and unloading trucks, one of which is the familiar use of ground chains on gasoline trucks to equalize static electricity which made it possible to transport gasoline on city streets with safety. He also made the first comprehensive analysis of cracking from large-scale runs and of the initial developments of vacuum distillation for improving lubricating oils. In 1933 he was appointed to the new position of comptroller of taxation.

N. C. Copeman, Asst. Manager Operating Control, Manufacturing
N. C. Copeman retired recently after 40 years’ service. Born and educated in Quebec city, he joined Imperial in 1906 as a clerk in the Montreal shipping office. He was transferred to the Sarnia accounting office in 1913, and four years later to Toronto as statistician in the executive division of the manufacturing department. He was appointed department manager in 1940. He was named assistant manager of oil supply for war during World War II. In 1946 he became assistant manager operating control.

F. W. Townsend, Asst. Superintendent of Loco
Frank W. Townsend has travelled widely in Canada and South America. Born at Camp Grove, Illinois, he joined Imperial at Regina refinery in 1916. Four years later he went to Talara, Peru, with International Petroleum Co. Ltd., returning to Canada in 1926 he joined the staff of Halifax refinery. In 1938 he was transferred to the Royalite Oil Co. at Calgary. In 1939 he returned to Imperial and was employed at Loco, B.C., in the engineering department. He was appointed assistant superintendent at Loco in 1944 and held that position until his recent retirement.

Forty Years of Service
Russell Charles Halbrook Receives 40-Year Button
Russell Charles Halbrook, senior order filler clerk in the manufacturing accounting department at Sarnia refinery, has completed 40 years’ service with Imperial. Born in Toronto, Mr. Halbrook joined the Company in 1902 and worked for two years in the refinery’s gum plant. He then left to take a business course. In 1913, he returned to the refinery to undertake clerical work in the accounting department. He was transferred to the marine department, Toronto, as assistant chief clerk in 1921, returning to the accounting department at Sarnia in 1933.

John J. Smith, of Petrolia, Ont.
Long service rewarded with Imperial an xg sox novelty for the Smith family of Petrolia. John J. Smith, who recently received a 40-year Imperial button in a son of the late Nat Smith who worked for the Company for more than 40 years. Mr. Smith holds the enxg sox tenure as superintendent of Imperial’s Cité Line Station at Petrolia. Except for a period in the armed forces during World War I and two years spent as a driller’s helper at Norman Wells immediately after the war, John Smith has spent all his life in Petrolia. He holds an active part in civic affairs and gives a great deal of his time to the town council.

E. T. Raiko, of Regina
New office manager at Regina, Ernest T. Raiko joined Imperial in 1930 as a mailing clerk at Winnipeg. During World War I he served overseas with the 38th Battery C.F.A. and was awarded the Military Medal. He returned to Imperial at Regina and after advancing through various jobs took over his present position in 1933. For the past 17 years Mr. Raiko has been president of the Regina Glyn Golf Club. He is a director of the Glyn club, and of the Saskatchewan Board Scout provincial executive board. He is a past master of the Northwest Mounted Police Lodge, A.F. & A.M.

J. M. Burden, of Moosomin, Sask.
John M. Burden, who recently received a 40-year service button, joined the Company in 1910 as a clerk at Moosomin, Sask. In 1916, he went overseas with the Canadian Mounted Rifles. In 1919 he joined Imperial in the stock department at Regina. The following year he was made order clerk; subsequently he was appointed construction clerk, operations supervisor and in 1946, division engineer.

New Medical Position
Dr. Gordon A. Sinclair Named Assistant Medical Director
Dr. Gordon A. Sinclair has been appointed to the new position of assistant medical director of Imperial Oil. A graduate of the University of Toronto, Dr. Sinclair did postgraduate work in England and Canada and holds a specialist’s certificate in internal medicine. He was in private practice for 12 years until the outbreak of World War II when he enlisted with the Royal Canadian Army Medical Corps. He served overseas from 1939 to 1946. He was mentioned in despatches and was made an Officer of the Order of the British Empire. He retired from the army in 1946 with the rank of brigadier and the following year joined the Company’s medical department as physician-in-charge, Toronto.
New Appointments

As a result of the developments in western Canada and elsewhere, many Imperial executives have assumed new responsibilities in recent months. Some of the individuals concerned are pictured on these pages. Other recent changes will be recorded in the next issue of the Review.

Marketing

C. C. Brabelle, assistant general manager of the marketing department; formerly: western regional manager

W. I. Magee, general sales manager; formerly: western regional manager

C. T. Wright, general operations manager; formerly: operations coordinator

J. E. Armit, western regional manager; formerly: manager, Manitoba division

E. E. Tilton, eastern regional manager; formerly: assistant division manager, Ontario division

L. B. Fraser, manager, Manitoba division; formerly: manager, development, oil and natural gas sales department

C. A. Robinson, manager, divisional manager, Ontario division

L. W. White, assistant division manager, Alberta division; formerly: sales manager, Alberta division

Manufacturing

J. C. Wilkinson, manager, fuel oil and bastardy sales department; formerly: assistant manager, fuel oil and bastardy sales

F. E. Lante, assistant to the vice-president (sales and transportation); formerly: natural gas manager, manufacturing department; formerly: manager, operating division

J. D. Brabelle, assistant general manager, manufacturing department; formerly: manager, engineering and development division

J. K. Jameson, assistant general manager, formerly: manager, engineering and development division

D. R. Edmonds, manager, engineering and development division; formerly: assistant manager, engineering and development division

R. W. Durlop, assistant manager, engineering and development division; formerly: assistant manager, engineering and development division

W. A. Williams, superintendent, Montreal east refinery; formerly: assistant superintendent, Montreal east refinery

Keith Lewis, superintendent, Winnipeg refinery; formerly: superintendent, Montreal east refinery

G. R. McMillin, assistant superintendent, Vancouver refinery; formerly: group supervisor, production control dept., engineering and development division

W. A. Murray, assistant superintendent, Vernon refinery; formerly: zone supervisor, North division

C. M. Smith, manager, refining and construction division; formerly: assistant to the general manager, cost, economics and budgets

John Hough, assistant manager, refining and construction division; formerly: supervisor, refining

Gordon L. Colphitt, manager, operation, Calgary; formerly: production manager, Imperial Oil Co., Ltd., Edmonton

R. W. Landes, assistant superintendent, operations, Edmonton production department, Imperial Oil Co., Ltd., Edmonton

G. A. Backofen, manager, operations, Imperial Oil Co., Ltd., Edmonton

A. F. Beck, district exploration manager, Edmonton; formerly: geophysical advisor, Edmonton

J. C. Hufnagel, district exploration manager, Edmonton; formerly: exploration manager, Imperial Oil Co.

W. A. Freilich, district lead, exploration, Edmonton; formerly: district lead, exploration manager

R. S. Dawson, assistant to the district lead, exploration, Edmonton; formerly: district lead, exploration manager

V. H. Hunter, district superintendent, Edmonton; formerly: district superintendent, Edmonton

R. V. Wieland, district superintendent, Edmonton; formerly: manager, Imperial Oil Co., Ltd., Edmonton

Western Producing

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Mrs. Sanderson and her Climate Machine

Verrons attentions at Norman Wells, partly because of the semi-isolation of the small refining community far up the Mackenzie River in the Northwest Territories and partly because, somehow, unusual people manage to find their way there.

And now something new has been added because in the past two summers Mrs. Marie Sanderson, a young and attractive scientist from Toronto has visited the Wells. She is a climatologist—a specialist in the things that are related to or affect climate.

Mrs. Sanderson is measuring what is technically called the potential evapotranspiration at Norman Wells. This means she is keeping records of the amount of water that is evaporating and transpiring from the land surface. When these records are compared with those of the rainfall and snowfall they provide a history of the periods of water shortage and surplus.

Dr. C. W. Thornthwaite, a U.S. climatologist, has devised a formula whereby water needs can be computed for any point whose latitude is known and where temperature records are available.

If the formula stands up to thorough testing it will be of great practical value to farmers, forestors or anyone else interested in growing things. It can tell them where irrigation will be necessary, when and to what extent. It will also be useful to hydro-electric engineers who are looking for likely water-power sources because it will help them to predict amounts of water run-off over large areas.

Mrs. Sanderson's experiments, like other studies at points of varying latitude, including Toronto, Bridgeport in New Jersey, and Mexico, are designed as a practical test of Dr. Thornthwaite's formula.

Mrs. Sanderson, a graduate of the University of Toronto, took a postgraduate degree in climatology at the University of Maryland and then joined the staff of the Ontario Research Foundation. Three years ago she rigged up Canada's first evapotranspirometer in a vacant section of Toronto's Mount Pleasant Cemetery. Last year a grant from the Arctic Institute led to her northern experiments.

Norman Wells was picked because it is reasonably accessible, far enough north to have 24-hour daylight for a period each summer but is not so far north that the permafrost never leaves the top soil.

Mrs. Sanderson flew in to the Wells for the first time in June of last year in an Imperial plane. She installed the evapotranspirometer near the Wells air strip about two and a half miles from the settlement.

The equipment consists of large metal tanks with pipe and rubber fittings. Each galvanized iron tank, measuring five feet by five feet by two and a half feet, is buried in the ground to within two inches of its rim. Six inches of gravel covers the bottom and the tank is filled with soil to ground level. An underground iron pipe connects the tank to the water supply mechanism about 20 feet away. This mechanism consists of a five-gallon reservoir which is filled to a fixed level every day. It supplies water to the earth-filled tank while a carburettor float valve maintains the tank's water level at a constant two feet below the surface. The amount of water necessary to fill the reservoir is a measure of the daily water loss from the tank. Provision is made for extra water that may enter the tank, such as rain.

After Mrs. Sanderson had left, readings for the experiment were continued by the local Department of Transport meteorologist and were forwarded to Toronto.

So far the results have been encouraging and seem to provide further evidence that the Thornthwaite formulae are based on correct theory. Mrs. Sanderson hopes the work will be continued for at least another year or two so that another bit of accurate knowledge will be added to what is known about conditions in the north.

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