AN OLD INDUSTRY GOES MODERN

Most of the fishing vessels which frequent the Atlantic "banks" are now equipped with diesel engines as well as sails. Typical of these power-driven vessels are the "Lillia B. Boulter" and the "Marjorie and Dorothy" shown at dock at the fishing village of Canso, N.S. The fuel-oil pipes leading from the storage tanks to the water's edge are now a part of every Maritime fishing port's facilities.

THE EDITORS SAY:

With all Canadians the personnel of Imperial Oil Limited and its affiliated companies in Canada assume the visit of Their Majesties King George VI and Queen Elizabeth. The photograph of the King and Queen on the front cover of this issue is published by arrangement with the owner of the copyright, Dorothy Wilding, Photographer, London, England.

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Drilling for oil beyond the shore line is nothing new but rarely does one come across as impressive a measure as that which appears on the cover of the current issue and for which The Imperial Oil Review is published in The Peterborough Pig and Rail Company. The derrick, 150 feet high, is mounted on a barge and when towed into position valves will be opened to flood the barge and then pilings will be driven to hold the rig firmly in place. When the well is completed the barge will be pumped out and the derrick floated away to another location. Ingenuity is one of the dominant characteristics of the oil seeker.

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Road maps are a commonplace to the present day motorist and a very important part of the service rendered by major oil companies to the gasoline consumer. Their preparation involves months of work by expert draughtsmen and careful checking of all detail is essential. On page six the story of the preparation of Imperial Oil's 1959 road maps is told.

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Those who think of the Sub-Arctic as a desolate region barren of all vegetation will find something of interest in "Gardening in the Far North," beginning on page 14.

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The review of Imperial Oil's operations during the past year submitted to the shareholders by the President, A. H. Harrison Smith, appears on page 16 and there is also a graphic presentation of how the Company spends the money which it receives from the consumer for its products.

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Enterprise and efficiency are necessary qualities in the success of operation of present day business. Operation of tankships is just one of the details of a large oil company's work. Here Imperial keeps abreast of the "push" in deep-water transport by discussing the description of its two new tankships recently launched in Canadian shipyards, beginning on page 22.
HOW OIL AND GAS WERE FORMED

AND ACCUMULATED UNDERGROUND TO AWAIT DISCOVERY AND USE BY MAN

1. Here is a model of an inland sea or embayment. Fresh water flows in through a river at the upper right and the ocean has access to it through the strait at the lower left.

2. Countless billions of organisms in thousands of different forms live and die in the shallow waters of embayments. Some of them look like the above.

3. Many of these life forms are microscopic and many others nearly so. Left, greatly enlarged, are remains mostly in the form of shells taken from the sands of an embayment. Many of these remains are little larger than the head of an ordinary pin, but while these things lived there was food and fat to them and when they died they were slowly buried in the mud and sands and the tiny fleshy and fleshy parts of them were the "source" material from which oil and gas were generated. The accumulation of animal and plant remains and their burial in the silts and muds was a slow, steady process covering periods ranging from thousands to millions of years.

4. As decades, centuries and eons passed, animal and plant remains continued to accumulate. Generation after generation of organic life died and settled to the bottom to accumulate in the mud. This rich "source" material piled up in layers or "strata", gradually filling up the embayment, as shown above.

5. A slight warping of the earth's surface may cause the sea water to withdraw and cause the deposition of coarse sediments such as sand and gravels over the accumulated layers of mud containing the organic debris.

6. Silt, clays, sands and gravel, etc., may continue to be deposited over the layers of organic sediment. The weight of these deposits will compress the layers of organic sediment as shown above.

7. As a result of this compression the tiny globules of oil which are the remains of the tiny fleshy and fleshy parts of the various minute forms of marine life are squeezed from the "source beds" of mud into the coarse sand or "reservoir rock" above. The sand absorbs the oil like a blotter.

8. The oil globules slowly gather in larger groups and are more or less surrounded by the entombed sea water within the sand. As the compaction of the sediments continues this segregation of oil and water also goes on and above we see a slab of rock composed almost entirely of fossil shells. The oil has been driven away by the compaction of this rock.

9. Increasing weight of accumulating layers continues to compact the organic mother sill and as a result of the pressure it becomes shale and the sand is altered into sandstone. Readjustments within the earth develop lateral compressive force which tends to bend or fold the layers of rock into "structures". Further segregation of the oil continues while pressure and heat cause the formation of gas within the sandstone layer.

10. As further bending of the rock layers goes on the almost complete segregation of oil, water and gas is accomplished. The heavy salt water occupies the lower flanks of the structure. The oil accumulates above the water and the gas seeks the highest part of the fold. The impervious shale layer "cap rock" above the sandstone prevents the escape of the liquids and gas into the layers above.
Talara... Some Impressions by an Officer of a British Man-of-War which Recently Visited that Port

FROM our anchorage the desert coastline looked inhospitable and the few scattered buildings gave the impression of loneliness. Going ashore was exciting because of the high swell that was fast setting up the harbour. You had to judge your step to a nicety, otherwise you did the splits with one leg in the boat and the other one poised on the catamaran.

But once you were safely on this wooden island you either walked across a sweeping, lurching ladder to reach the jetty, or stepped on to a wooden platform and were whisked through the air by a crane which deposited you safely on the pier.

The noise of nearby workshops, the clean smell of oil, the bustle and hurry of workmen, the glare of the sun, the heat of the noonday sun, the huge town that stretched away from the end of the pier, the vast oil refinery glittering in silvered paint, the huge silvered oil storage tanks, the motor cars and lorries that sped by, and the smiling happy-go-lucky populace were some of the first impressions that greeted you on arrival at Talara—the headquarters of the International Petroleum Company in Peru.

The reception committee had drawn up a wonderful programme of dinners and dances, tennis and golf matches, shooting, fishing and riding picnics, conducted tours of the oilfields and refinery plants, rifle and football matches during our four-days visit. There was also a polo match arranged—but alas it had to be cancelled because of torrential rains, the most severe since 1925. So our visit coincided with some climate records—it was also the coldest winter experienced for many a long day, and a green blush of weed had begun to cover the countryside. A flowering desert! Talara was full of agreeable surprises.

Canadian, American and British men filled the key positions of this vast concern whose population, mainly Peruvian workmen and their families, numbered (with Negritos—a subsidiary oil field about 15 minutes drive away) 25,500 souls.

To help the worker to enjoy his leisure moments there are swimming pools, cinemas (or as you call them in Canada, "movies"), football and basket ball pitches, social clubs and confraternity halls where household requirements are purchased at reasonable prices.

Hospitality was on a lavish scale. You arrived at a house for a meal. The exterior of the house itself was unpresuming and built on the bungalow style with fine mesh netting round its verandas. A few flowers and a patch of grass struggled bravely in front of the house—a great tribute to the owners' craving for a bit of greenery. But once you entered the front door a thrill awaited you, the furniture was the scene of comfort and the decorations most pleasing and restful to the eye.

Immediately a wonderful host and hostess made you feel at home, and under the spell of their charm of manner, their excellent food and wine you forgot the desert and enjoyed its justly famed and characteristic hospitality. So complete was the illusion of sitting in a house on the outskirts of a big city that you took for granted the cling soup and its sherry, the fish and its white wine, the joint and its whisky and soda, beer or champagne; the dessert and the port wine, the liqueurs, the coffee and the excellent cigars.

And later at the dance in the "Whites Social Club" you did the Lambeth Walk, the Palais Glide, fox trots and waltzes to a first class jazz band with partners whose good looks, evening gowns and skill in the intricate steps convinced you, in spite of whatever doubts you may have had previously, that life in the desert is just an unbelievable miracle and at any moment you will wake up in a first class night club in London, Paris or New York.

But if you, the visitor, were out to combine a thirst for knowledge with that of pleasure, you had excellent opportunities to mix both and in each sphere there were expert guides to explain and demonstrate how oil—the Liquid Gold—was produced, or how the golf or polo ball was made sail through the air with the greatest of ease.

In the Filling Plant, for instance, you saw sheets (Continued on page 21)
Mapping THE HIGHWAYS

NOW THAT the world is a wheel and going places, there is an increasing desire to get there fast, and an increasing impatience with anything that may occasion delays, even if there is very little depending on the matter of just when we arrive. Hence the road map, that handy compendium of interesting and valuable information aimed to speed the passing traffic, has come very much into its own.

Everybody is familiar with road maps. Almost everyone owns one or more of his own; for they are one of the relatively few valuable things that it is possible to get for nothing. And the natural result of being familiar is that very few people have taken the trouble to realize the multiplicity of problems that attend their creation.

Years ago, as road map making history goes, when they were in their infancy, some lucky sub-assistant map maker inadvertently interchanged the position of two small Ontario municipalities. Not a great matter, one would think, but the whiles of outraged local patriotism spread to the home-town boys from coast to coast, until it threatened to become a national chorus. It set at rest for all time the possible impression that people do not study road maps.

This local patriotism is one of the bug-a-boons that keeps the road map maker awake at nights. The map maker may have whizzed through some local cross-road without ever noticing it. But the name of that same cross-road is burned on the hearts of its citizens, and a map that omits it is not worthy to be called a map.

The oil companies who prepare and distribute these road maps certainly have no grudge against the cross-road. The idea is, of course, to serve the customers who buy their gas and oil, with perhaps an underlying hope that, being well served, and encouraged to know about, these customers may buy more gas and oil. Certainly it is no part of their intention to look askance at anyone. But the essential quality of a good road map is that it may be so clear that he who reads may read, and you can’t read a map that is all cluttered up with cross-roads and by-roads and villages and hamlets, however dear they may be to the hearts of their habitants.

So the first important task of road map making is the troublesome decision as to what goes in and what stays out. And every day that becomes an increasing problem, as new roads appear and new villages spring up. It will be readily understood then that it is no mean task to produce road maps such as those distributed by Imperial Oil dealers from coast to coast. It calls for wise decisions and sound judgment both exercised to the end that the material may be spliced to his destination with the maximum amount of ease for the minimum expenditure of effort on his own behalf.

That means of course that a map must be made foolproof as far as human ingenuity may make it, for no one is rash enough to give the idea that all of us who climb behind a steering wheel are mental giants. But, mental giant or no, the idea is to please and serve a customer, to the ultimate end of building good will. So the map must be correct to the last smallest detail, for you don’t build good will by leaving a traveller stranded on a by-road or a road under construction when he confidently believed himself to be bowling along a trunk highway.

The bases of the present day road maps are, of course, the detail maps of the Topographical Service, published by the Dominion Government. These are supplemented by other maps published by the various provinces and by other interests. Such maps of course contain a world of detail that would only befuddle the earnest traveller, matters of road allowance, mountains, valleys and freight sidings that mean less than nothing to the traveller wanting to get from Toronto to Windsor in the least possible time. More than that, these maps become dated very soon. New roads are being built, old roads improved or discontinued. So the road map maker must call on a multitude of different agencies to help keep the record up to date. He turns for assistance to Provincial Highway Departments, County Road Engineers, Canada Year Books, the

(Continued on page 52)
AN ADVENTUROUS GENTLEMAN

By RONALD W. MACKINNON
Fort Norman, N.W.T.

While tidying up my office before leaving Norman Wells last fall I came across an issue of the Calgary Albertan of November 14, 1936 in which great red letters across the top of the front page read, "Canadians Murdered, Mexico." The dispatch revealing the crime was from Vancouver. It was to the effect that word had been received in Vancouver that Major John C. Hartley, a British Columbia mining engineer, and Commander Edward M. Geake, R.N., had been slain in the wild country of northern Mexico which they had entered in search of gold. There were no further details available but as I read again the tragic message, I pictured him again as I had first laid eyes on him when he was mate on the season's first boat out of Waterways for Fort Fitzgerald in 1921. Obviously an Englishman, he was somewhat above average height and of slender, wiry build. His keen blue eyes, his close-cropped sandy and his lithe, active manner, together with his great reticence on all matters relating to himself, made him a figure of more than usual interest. He was about 35 years old then and it was apparent that he was no stranger to boats, but of the distinguished naval service during the World War that had raised him to the rank of Commander, not a word could be extracted from him. He was having a rough time of it. The skipper and he did not seem to be in sympathy and certainly things were not pleasant for Geake but he carried on efficiently, conscientiously and quietly, and like the gentleman he was took whatever was going with a smile and a cheerful "Aye, Sir!"

When the voyage ended at Fort Fitzgerald, Geake signed off the crew and nonchalantly accepted a job cutting cordwood at Fort Smith for one of the steam-driven boats plying out of Fort Smith to the Arctic via the Slave River, Great Slave Lake and the Mackenzie.

I saw him from time to time at Fort Smith and one day he approached me about a job at Norman Wells.

Geake went down with a touch of flu and was abed for several days. Each morning one of the Oklahoma tool dressers would ask Ross how Geake was and if he had had his morning ablutions. "He must be getting dirty" the tool dresser observed to Ross.

In 1922 the crews at Norman were disbanded and returned to Edmonton. Early that summer a gold strike was reported on Justice Creek, about 200 miles south of Norman Wells on the Mackenzie River. Geake got gold fever and bought a canoe from an Indian for $10. Up in that country in those days any sized canoe in good condition was worth about $200 so you can imagine the kind of craft that Geake bought. You could throw your hut through it in almost any place. However he patched up the old canoe, bought some food supplies and waited for the wind to change. About the third day, with the wind still blowing strongly from the south, his impatience overcame him. I told him he couldn't travel upstream in that kind of wind but he answered "I'm tired of waiting and I'm going North," and I did not see him again until 1925 or 1926, although I heard that he and a Japanese dog driver from Alaska had crossed the Arctic Ocean from Aklavik to Herschell Island, a distance of 90 miles, in the same old $10 canoe. I also heard that Geake subsequently hired on as a deckhand on a boat plying between Vancouver and Herschell Island through the Belingh Straits and that during a long spell of very bad weather he did noble service in navigating the boat back to its home port and was largely responsible for its safe arrival.

Following this Geake called on us at Calgary. He had heard that the Company was contemplating geological surveys in China and was anxious to be off again. When I told him there was nothing to this he said "Goodbye" and I did not see him until ten years later when I met him on the street in Edmonton. He had been running a ranch and also raising pedigreed dogs in Peace River, Peace River, and seemed to be reasonably prosperous but as always the windchill was troubling him and he told me he was planning to set out shortly on a prospecting trip. I presume this was the ill-fated Mexican venture.

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IMPERIAL OIL REVIEW

SPRING, 1939
THE MONKMAN HIGHWAY

Marches On!

Mrs. Charters Tells Us More of the Peace River Country's Struggle to Cut a Roadway Through the Rockies

"Are you in earnest? Write this very minute.
What you can do—or dream you can—begin it.
Buddhists have genius, power and magic in it.
Only begin—and the mind grows heated.
Begin, and then the work will be completed."

This quotation might easily have been the slogan of the Monkman Pass Highway Association who in October, 1936, began the unheard-of task of building a highway through the Rockies to connect the Peace River country with the Pacific. Less than a year later they had a rough but passable wagon road over which a truck journeyed fifty miles to Stony Lake. (Imperial Oil Review, Spring Number, 1938.) Support, both financial and moral, from towns along the route from Prince George to Vancouver, followed. The early spring and dry summer of 1938 helped the larger crews of road workers to make splendid progress in their pioneer road building and by the end of July the first party of sightseers was organized to go over the new road.

Instead of one box truck, this time a regular cavalcade of trucks and even a few cars brought nearly two hundred people into the mountains over a road that had been a lonely pack trail a few weeks before. Instead of motoring nearly a thousand miles to enjoy a mountain holiday, Peace River folk now could motor only eighty miles from Rio Grande and see the stupendous Kinuso Falls, (fifty feet higher than Niagara,) in the heart of the mountains. What better than the upper deck of a truck from which to view the scenery?

Some of us had been with the Pathfinder club to Stony Lake the fall of 1937 and felt like veterans among a lot of raw recruits. We knew all the bumps and how to take them. But we were so much surprised as the others. Gone were the stumps and stones. The road had been made wider, many steep grades and winding stretches had been eliminated entirely. All streams had been covered and the truck sailed along with scarcely a bump worth mentioning.

A truck load of men passed us. On the side of their car we read: "We are the Northman crew doing our bit for the Monkman Pass. Goodbye." All summer such self-sufficient crews from the farms and towns scattered throughout the Peace country have
donated two weeks work each to make the road to Stony Lake as fit for motor travel as hand work can make it.

To avoid the steep climb to Moonlight Canyon a new stretch of eight miles had just been completed to Stony Lake, which we reached in less than seven hours. (It took twenty-four hours a year ago.) Two large work tents, men and horses, two trucks, two cars, five new log cabins and a swarm of people scented to line the shore of the lake, and that lake even boasted a pier and some boats! What a transformation since our last visit!

In the morning after a breakfast, which included fresh lake trout, we started west over the new road. As we climbed steadily but gradually the valley led on, wide and reassuring, between an ever changing panorama of lofty peaks. At no point is the valley less than a mile wide. It was hard to believe that the road we traversed was still fresh from the hands of the builders, worn down by only the supply wagons.

Four hours travel brought us to the Kinusen bridge: end of the trail and twenty-five miles west of Stony Lake. Here the main crew of fifty men were at dinner. Alexander Monkman, faithful trail blazer in spite of his nearly seventy years, sat by the cook car where his daughter presided.

The bridge, which is 120 feet long, is a splendid piece of work. Built by hand entirely of logs, the sturdy piers are weighted with stones. Low river banks simplify the work of these pioneer bridge builders.

To view the Kinusen Falls we hiked ten miles over a poor and rocky pack trail, carrying blankets and grub. The last two miles were over heavy deadfall along the bank of the Murray River and had been aptly named "Tzan's Boulevard." Here we spent the night. In the morning we climbed down a steep bank of shale.

The roar of mighty waters deafened us; but what an awe-inspiring sight! Through a rocky gorge whose formation had been strangely disturbed by some ancient upheaval, that mass of water plunges madly down in an abandon of foam and spray, two hundred and ten feet to the bottom. Logs, caught in the wild rush of waters, are stripped and shattered before coming to rest in a quiet pool. Undoubtedly the Kinusen Falls on the Murray River are one of the scene wonders of Canada and need only a good motor road to make them a mecca for tourists.

Twenty miles west of the falls and over the summit of the pass in Monkman Lake, said to be more beautiful than Lake Louise. This summer, for the first time, white women saw that mountain gazed gem which will be, perhaps soon, a lovely resort.

EARLY in August, the Monkman Pass Highway Association called in the main work crews because of lack of funds. Plans then went forward to get a car through the pass and on to the gravelled roads at Hansard, thence to Vancouver, before winter. A small crew of old faithfuls was kept to cut just sufficient passage for the car which arrived at the Kinusen bridge early in September. Without serious difficulty the car got to the summit of the pass. Then obstacles piled on obstacles. The radio failed to contact headquarters, supplies were delayed, the men marooned in the mountains, knew cold and hunger. There was labor trouble, and finally snow. But the car reached the bank of the McGregor River November 6th, only to find that it was a slip late. Slush ice made it unsafe to transport the car down river although the men were taken to Hansard by boat. So it rests in a rude shelter, waiting for spring and a triumphant conclusion of its pioneer tour.
Gardening IN THE FAR NORTH

At Norman Wells, on the Mackenzie River, Vegetable Patches Flourish During the Brief Sub-Arctic Summer.

If you pride yourself on your tomatoes and your other garden vegetables don't make too many claims for them until you have seen some of the vegetables that are grown at the Norman Wells near Fort Norman on the Mackenzie. Less than 200 miles from the Arctic circle, this area is a veritable paradise for the vegetable gardener—an interesting paradox to all who visualize the Arctic and sub-Arctic as a barren region.

When you look at Fort Norman on the map you just don't associate it with potatoes bigger than your fist, with turnips weighing over eight pounds, or carrots more than a foot long. But if you were to follow the Mackenzie to the delta this summer you would see many flourishing gardens. There is an abundance of vegetables, flowers and other plants every summer which thrive and mature rapidly in this vast area that is familiarly known as the Land of the Midnight Sun. Wherever there is a clearing suitable for gardening, nature can be made to work overtime producing a good crop of vegetables.

One resident of this area has estimated that a garden in this section of the world is worth fifteen hundred dollars a year to a man with a family. Fresh vegetables used to be a luxury in the far north but once the settlements were organized, gardening and small scale farming became a necessary and useful avocation for everyone.

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IMPERIAL OIL REVIEW

SPRING, 1939
All contemplated capital expenditures in Canada must, therefore, take into consideration the increasing difficulties of obtaining reasonable rates and also the increasing risks of functional obsolescence resulting from rapid technological progress. These difficulties and risks, together with the economic limitations imposed by foreign sources of product supply, must be given full weight in determining the extent to which your Company's Canadian earnings justify the use of its liquid assets for manufacturing facilities in Canada.

Plans drift steadily in the year for certain changes contemplated for 1939 in manufacturing equipment, were subsequently modified in line with the foregoing considerations.

Your Company carried on as in the past its program of research and engineering development.

WESTERN CANADA

Completion of 37 producing wells by various interests in the Turner Valley resulted in a substantial increase in production. Improved crop conditions on the Prairies were fortunately concurrent and afforded a larger market for earlier in the year for certain changes.

The Turner Valley in Canada consequently was 21,305,740 barrels as compared with 20,054,458 barrels in 1937.

The international Petroleum Company Limited entered into an agreement with Mene Grande Oil Company C.A. whereby it acquired a half interest in all that Company's Venezuelan oil production as from December 15, 1937. Subsequently half of this interest was sold to N. V. Nederlandische Olie Maatschappij effective as of the date of the Mene Grande purchase. The Mene Grande Oil Company operates in both western and eastern Venezuela. During 1938 International's 25 per cent. interest in the Mene Grande production repre-
seated 5,883,610 barrels. Substantially all this oil was produced in the Morrocoy Basin, western Venezuela. The Mene Grande Company has extensive holdings in proven and prospective areas in eastern Venezuela, and during the year extensive explorations were sufficiently successful to warrant the construction of a pipe line to Guatire, a deep sea terminal on the coast approximately one hundred miles from the center of production. Construction of this pipe line, which is 16 inches in diameter, and which with the one pumping station presently planned will have a daily capacity of approximately 100,000 barrels, is now in progress and completion is expected by early September. A thirty-mile 10-inch pipe line terminating at Boca de Ureña in the eastern part of the Orinoco Basin (eastern Venezuela) was constructed to handle the production of that area.

IMPERIAL OIL SHIPPING COMPANY LIMITED

Two new diesel-driven sister ships, the “Petrole,” built at Sowle, Que., and the “Imperial” built at Calhoun, Ont., were added to the fleet of the Imperial Oil Shipping Company Limited last year. Both are of all welded construction. Their design embraces many new features, the most interesting of which are the electro-magnetic clutches and reduction gear drives which, in these vessels, are the first time incorporated in ships built in the western hemisphere.

As of December 31 last the fleet of the Imperial Oil Shipping Company Limited consisted of 25 vessels of 160,785 deadweight tons. During the year the combined tonnage of the fleet amounted to 70,100,000,000 cubic feet of crude oil and products. This compared with 34,319,157 barrels transported by these vessels during 1937.

GENERAL

Affecting as it does so wide a range of people, your Company’s progress has an important bearing on Canadian economic conditions. The Company provides extensive employment, consumes large quantities of Canadian products. Many of stockholders pay dividends directly to approximately 50,000 shareholders in Canada. Many thousands of other Canadians indirectly benefit as policy holders in insurance companies, as shareholders in investment funds and through various charitable, business and other public and private institutions in Canada which hold stock in Imperial Oil Limited. Norwithstanding statements that a preponderant part of the earnings of your Company is paid to non-resident shareholders, the fact is that more income accrues to Canadian shareholders from your Company’s diversified activities outside of Canada than accrues to non-resident shareholders from the operations of your Company and its subsidiaries in Canada. The national economy benefits very materially by these additional funds so widely distributed each year among the Canadian people.

In respect of Canadian refining and marketing only (and not including import taxes and taxes paid by subsidiaries) your Company’s charges in 1938 for Federal and Provincial income taxes, sales taxes and Provincial corporate, municipal and school taxes were $5,878,125. This compared with net earnings of $5,573,320.24 from your Company’s Canadian refining and marketing operations. In addition your Company collected, from the consumer, on behalf of the nine Provincial governments, gasoline taxes totalling $11,460,773.17.

The increasing interference with the free combat of business and the excessive diversion of income to public treasuries, which restrict capital available for productive purposes, are factors which inevitably must seriously affect the business of your Company as well as of other companies.

By order of the Board,
G. HARRISON SMITH
President.

HOW THE COMPANY EARNED ITS INCOME IN 1938

Net Earnings from CANADIAN REFINING and MARKETING OPERATIONS 13.7% of total net income

Oil dividends received from SUBSIDIARY COMPANIES engaged in world trade and income from miscellaneous sources 86.24% of net income.

Coca-Chewing in the Andes

By LEWIS H. FRASER, M.D., C.M.
Medical Officer, International Petroleum Company Ltd., Talara, Peru.

RIDING along a mountain trail of the Andes at an altitude of 13,000 feet, in muleteer, lashed up in a sweater, overcoat and muffler and still chilled to the bone, I watched a barefoot young Peruvian Indian descend only in a cotton shirt, short drawers and with a poncho over his shoulders, his head thrust through a hole in the center, drove his llamas over a partially frozen stream. The llamas broke the ice as they passed across; the Indian trotted lightly after them through the ice water.

On another occasion, riding along the mountain-side, over a very narrow and precipitous trail, where a stumble or a mis-step would propel one off into space and a drop of thousands of feet to an inglorious death amongst the rocks of the gorge far below, I met an Indian with a huge sack of something on his shoulders, coming from the opposite direction. As he approached me, I saw in his face an expression of terror, and as he came nearer, he started at me and then seemed to be a sort of pleading look in his face, as if beggimg me to stop my horse. By this time he was almost under my horse’s feet; as I drew up my mule, he suddenly dropped the sack from his shoulders and sprang with a great leap to the inner side of the trail and glued himself to the mountain-side, clutching at anything to hold himself closer to another earth, while I passed on my way.

What caused these manifestations of indifference to extreme cold on the one hand and of extreme fear on the other?

Millions of South American Indians keep themselves temporarily insensible to hunger, cold and fatigue by chewing coca leaves, from which cocaine is refined.

An Indian Arriere or llama driver of Peru, loading up one of his llamas with merchandise.

The leaves have a more extensive sale than any other article in all the towns and villages of the Andean plateau from Southern Colombia to the Northern Provinces of Argentina, Ecuador, Bolivia and Peru. The annual product is about 10,000 tons, valued at around $10,000,000, Bolivia and Peru are the chief producers.

The most obvious habit of the Andean plateau Indian is his uncanny use of the coca plant, the botanical name of which is Erythroxylon Coca, a shrub indigenious to the Andes whose chief alkaloid is cocaine, to which its properties are mainly due.

A day’s supply of coca leaves is carried in a small woven pouch which is worn at the belt. In a small gourd, hung from the neck by a string, is carried a substance known as Iluuta or Laura, which is usually composed of lime, potato-beets and ashes of the Quinua plant. The mixture has a potent quality of about 30% and the effect of the potion when mixed with coca leaves is to liberate the alkaloid which, as we know, is cocaine. The Indian stuffs the inside of one cheek with coca leaves, then takes a slender stick or thin metal rod and dips it into the contents of the gourd and draws it through his mouth to mix it with the coca, and chews away.

Photo by Benny Galloway

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IMPERIAL OIL REVIEW

Page Nineteen

SPRING, 1939
GARDENING

(Continued from Page 14)

There are several explanations of this interesting phenomenon. The chief reason for the successful growth of vegetables here are the long summer days. The sun actually shines many more hours than it does in southern sections of Canada, and during July and August produces surprising results in a short growing season. For weeks daylight never fades from the sky and if need be gardening can be carried on at midnight. Consequently no one ever worries about daylight saving or when they are going to get at the gardening. Further the soil in the Mackenzie valley is quite fertile in spite of the rock formation of the ground and is well-suited to cultivation of seasonal vegetation. The rainfall is light and the temperatures are moderate because the farther north you are the lower the altitude becomes. The growing season is restricted from about six to eight weeks but this does not hinder the growth as potatoes have been dug up and used 55 days after planting and long before the frost sets in the root crop is ready for storing.

All through this northern country which resembles Northern Ontario or Quebec in climate and soil conditions there are cows, pigs and chickens but no one goes in for raising livestock on a big scale except a few of the missions.

The photograph below shows one of several pieces of X-ray equipment donated to the Bemia General Hospital by the Industrial Council of Bemia Refinery and the Company.
Leading the Way

IN TANKER ENGINEERING

The Two New Tankers Recently Added to the Imperial Fleet are the First Commercial Vessels in the New World to Employ Reduction Gears and Electro-Magnetic Slip Couplings

A GREAT many oil companies have built a great many tankers but it can be stated without fear of contradiction that no tankers for any company have ever received or deserved more favorable attention from both Canadian and American marine authorities than the two vessels launched by The Imperial Oil Shipping Company, Ltd. late last season.

To the casual observer watching trials of the "Imperial" in Collingwood Bay on November 21st, or of the "Petrolite" a week later at Sorel, where the Richelieu River joins the St. Lawrence, there was little to indicate from the external appearance of these two ships that other than conventional design was being successfully demonstrated. However, to the several score of qualified experts on board in each case representing the owners, Lloyd's Register of Shipping, the United States Maritime Commission, the Canadian National Defense Council and foremost ship and machinery builders of both countries, there was much to place them far in advance of present merchant ship design and construction. Here were commercial applications for the first time in the New World of a revolutionary type of marine drive with no connection or contact whatsoever between the driving engines and the propeller shaft.

The description of this new and unusual method of power transmission will be appreciated better if preceded by a brief description of the vessels' general characteristics. The "Imperial" and "Petrolite" are sister ships from plans by the Imperial Oil Shipping Company's naval architect, J. M. Dunlop. Construction to Lloyd's Plus A4 specifications was entrusted to the Collingwood Shipyards, Ltd., Collingwood, Ont., and Marine Industries, Ltd., of Montreal, respectively.

Guaranteed speed which was well exceeded on the trial trips of both ships is 11.25 knots with a cargo capacity fully loaded of approximately 11,000 barrels.

Particularly excellent jobs of welded hull fabrication were executed by both yards. In fact, the owners' confidence in workmanship, materials and machinery was perfectly demonstrated when, after approximately seven hours of trials, the "Petrolite" was ordered to proceed at once to Talara, Peru, for her first cargo assignment. The "Imperial," also, was dispatched at once for her home port at Irving, N.B., via the Panama Canal where she was inspected by interested United States Naval authorities. As indicated, these new tankers conform to the best accepted general design for this type of vessel and are distinguished by outstanding machinery installations rather than unusual hull features or design.

The engine room is located aft as is customary and contains the usual auxiliary equipment, frc, sanitary, bilge and cargo pumps, all motor-driven. Both ships are equipped to carry mixed grades of oil or gasoline and are fitted with four cargo pumps, each of which, with its respective piping system, is independent of the others to insure complete flexibility for loading or unloading. A 100 hp. oil-fired boiler provides steam for heating both crew quarters and cargo when necessary. Electric power for lighting and general service in port is furnished by a three cylinder Diesel generator set, with a six cylinder Diesel generator set to provide additional electric power when under way with the main engine generators uncoupled.

With this general picture of the vessels in mind, let us proceed to examine the main propulsion drives which were responsible for the almost unprecedented interest displayed at the trials. The twin main engines for each ship are two cylinder, seven cylinder Diesels which develop 700 h.p. each at 400 rpm. These are placed...
The main engine crankshafts are connected to the Farrel-Birmingham reduction gears through Elliott electric slip clutches. These can be likened to syncro- nization motors except that both rotor and stator turn in the same direction and at the same speed. The armature or inner member is rigidly mounted to the main engine crankshaft while the field or outer member is integral with the reduction gear pinion shaft. A air gap of approximately one quarter of an inch separates the two parts of the coupling. Electric current amounting to about 1/5 of 1% of the power transmitted is introduced to the field through brushes. This sets up a magnetic flux which holds the outer member in constant alignment to the core of the gear, enabling it to turn at a constant angular speed or direction. Engine and gear are instantly uncoupled by throwing the proper switch on the engineer's control panel which cuts off the current.

The advantages of the new electric slip coupling and reduction gears are many. Tremendous savings in propulsion machinery space and weight result from the use of high speed multiple units. This results directly in greater earning power for the vessel through increased cargo capacity. Either Diesel engine can be uncoupled instantly while the ship proceeds under the power of the remaining engine. Since there is no mechanical connection between engines and the propeller shaft it is impossible to have vibrations from the crankshafts or shocks from fouling the propeller transmitted beyond the coupling.

Fuel consumption records indicate that both vessels are remarkably economical to operate. On the first run from Sarnia to Port Colborne, the “Imperial” burned only 27 barrels of fuel oil, as against the usual 56 barrels for a steamer with triple expansion engines of comparable power and capacity. Similarly, from Montreal to Halifax, each tanker consumed 105 barrels of fuel oil as opposed to 170 which were previously required for equivalent steam operation. These outstanding fuel savings of over 70 per cent. were accomplished, in part, through the careful direction of the engineers and partly by the ability to operate in restricted waters on one engine only in a satisfactory manner, which is one of the advantages of the new type drive installed.

of tin pass through various machines where they were cut, shaped, joined together, soldered, stamped, a handle put on, and then black-washed and polished. After a companion into a wooden case and finally taken on a belt to a store, all in a matter of minutes, the whole process almost unnoticeably by hand.

Each tin, so useful when empty to roof the hut of the native from Peru to Timbuctoo, contained five gallons of gasoline. Tins were filled at the rate of two thousand an hour or sixteen thousand in the normal eight-hour working day. The principal market for gasoline is in Peru, Chile and Brazil. If you were a member of the Company and wanted gasoline for your car you purchase it, like any ordinary citizen, at the filling stations.

The refinery is a huge concern and the systems in the production of gasoline, kerosene and heavy oils, and the temperature recording room, are most interesting.

In one building the various grade of gasoline and kerosene came through in long pipe lines for examination through glass openings, and one supply of gasoline went round again through clay which gave it a dingy appearance, for commercial purposes, and at the same time prevented its loss of colour.

Asphalt or residue was produced in huge, open-air tanks and when set was broken up by a system of chains. It was stored in sacks, and sold so cheaply that now you are no longer amazed at the excellent motorising roads through Peru and "Down South." Asphalt is such an innocent looking substance in the making that it tempted one member of our party to test its consistency with his feet. A severe burn was the result but thanks to the excellent treatment he received in the local hospital he made a good recovery.

The hospital is near the main jetty and does not possess an imposing frontage. But as you have already been deceived by outward appearances in Talara you are on your guard against surprises when you enter its main swing doors. You need to be, as too much expression of astonishment is not tactful. Talara is not the last place God made. Everything is first class. There is a staff of seven doctors and seven nursing sisters, a first class laboratory, x-ray apparatus, an air conditioned, wonderfully fitted-up operating theatre. The wards are bright, airy and cheerful; and there are about 200 beds.

Skilled medical and surgical work is performed on white and native patients—even cataract operations are so common as to be no longer fashionable.

Then for those of us who were desirous of seeing the dawn mists roll away, or light twinkle towards evening, nature awarded us with such wonderful colouring effects at sunrise and sunset. Then at night the brilliant lights of the Plant and town, the flood light effects on the oil tanks gave to the whole place a warm glow—a friendly Fairyland greeting.

Everyone seemed happy in Talara and gave the visitor a kindly welcome which left you an abiding memory of a most hospitable people that you long to meet again, and, as the host, when we do meet far away in the future, to try and offer them some little return for their famous West Coast hospitality.

Goodbye . . . to an Old Friend

"The tanker, 'Impeco', sailed for Victoria this afternoon, behind a tug boat, to be scrapped":—News Item.

The interest of all members of the Imperial family, together with shipping circles in general, has recently been centered around the M. V. "Imperial," one of two recent additions to the Imperial fleet.

Little, if any, mention has been made of the S S "Impoco," one of the ships "provisioned" after forty years of successful operation, and now replaced by the M. V. "Impecco". This is in itself remarkable, as the usual life of a tanker is twenty years and in rare cases thirty.

A short history of this ship may prove interesting. She was built and launched at the shipyard of the Yarrow Iron and Steel Co. of Newcastle, England, in 1899, for the Mineral Oil Company Limited. The vessel's original name "Minoso" was derived from the company's name. She traded principally to Black Sea ports and later, when this company's reverse, was sold to the Anglo-American Oil Company Limited. She was chartered from the Anglo by Imperial Oil and later purchased, connecting operations in 1902. The ship was re-named "Impecco," which she retained until the new "Imperial," was given her name to retain the same in the fleet, and she became "Impoco".

In addition to being the original tank steamer of the Imperial Oil fleet, she also had the distinction of being the first tank steamer to operate on the Great Lakes.

As the demand for petroleum products grew, additional tonnage was built for the lake trade. It was also decided to distribute petroleum products in built in British Columbia and the S S "Impecco" was transferred to the West Coast in 1922. Since this time until the early part of the year she has been engaged in distributing petroleum products both by bulk and packaged to B.C. stations.

Some years ago business has no room for sentiment. As a contradiction of this you will find on the executive floor of the company's offices at Toronto, a sign's bell with the name "Minoso" inscribed on it and a plate at the base bearing this inscription:

*1898 - 1939

MINOCO — IMPERIAL — IMPOCO

Old ships - Old friends. It is to stress that the affection of the ordnate ship.
Mostly Personal

- Here are 12 members of the 1930 Lawn Bowling Club, comprising 3 titles who won the Barnard Cup, and members of the club rank championship in the British Columbia Lawn Bowling Association's annual tournament for 1930. Standing, left to right, are Tom Knowles, Barney Horne, Bill Topping, Johnny Walker, Joe Hart; centre seated, Frank Martin, Bert Jnr, Bill Tushbun, skip and president of the club, Jack Taylor, Charlie Collott, front seated, Bill Easton, skip, and Bill Hart, skip, with the valuable silverware between.

The gold mine operated at Lake Rose, P.Q., by Lake Rose Mines Limited, like many others in Canada, virtually owes its existence to the railroad. Located one hundred miles from the railroad, this mine is accessible by air only. As a result, all equipment, materials, fuel and men must be flown "in". The photo on the right shows a 2,500-lb. engine which has just been unloaded. J. C. Broun, mine manager, is standing at the plane door, facing the camera.

- Dr. Beno Simard, development chemist in the Imperial Oil Montreal Laboratory since 1924, and recently elected president of the Montreal Light Aerialplane Club, is shown on the left receiving the Lyall Memorial Trophy. This trophy is awarded annually for "best" pilot of the Montreal Club. Dr. Simard was born in Montreal and has held a Private Pilot License since 1934.

WALTER H. DICKIE PASSES

- Head of Traffic Department joined the Company 27 Years Ago.

WIDELY known in transport and petroleum circles throughout Canada and the United States, Walter H. Dickie, Traffic Manager of Imperial Oil Limited, died in Toronto, April 15th, after a brief illness.

Mr. Dickie, who was in his fifty-third year, was born in New England. After several years of experience in traffic departments of large industrial organizations in the United States, he came to Sarnia in 1912 as Assistant Manager of the Imperial Oil Traffic Department. He moved to Toronto when the executive offices of the Company were removed from Sarnia. In 1930 he succeeded the late C. H. Lown as Traffic Manager.

The Imperial Oil Review extends its sincere sympathy to Mrs. Dickie and family on behalf of the great number of Company employees who admired the late Mr. Dickie as an able executive and esteemed him as an unfailing friend.

MISS PEARL WIGGINS RETIRES

- Miss Pearl Wiggins who joined the company in the closing years of the Great War on April 16, 1918, retired from active service this year on March 31st. She is now a member of the happy group of Imperial Oil annuitants who are enjoying a well-earned retirement.

For the past 21 years Miss Wiggins has held important secretarial positions. She was private secretary to the late C. R. Ewing, President of Imperial Oil Refineries Ltd., and after his death in 1931 continued as secretary to Mr. Ewing's successor, L. C. McCluskey, Vice-president in charge of manufacturing.

Her home is in Perry Sound where for many years her father was an agent for Imperial Oil Limited until his retirement in 1931.

C. S. CARRICK RETIRES

- C. S. "Charlie" Carrick has retired. After 41 years with the company he has laid down the reins as resident manager in Sault Ste. Marie, and under the provisions of the company's annuity plan will have time to devote himself to his favourite pastimes, golf.

Mr. Carrick's retirement became effective on April 1 and on March 7 his friends and associates gathered to tender him a banquet and to present him with a fine set of golf clubs. Most of those present were men who had grown up with Sault Ste. Marie, and happy reminiscences of old days made the evening pass all too quickly.

Starting with Imperial Oil Ltd. in London, Ontario in 1909, he was transferred from there to Belleville, then to Kitchener and finally to Sault Ste. Marie as sub-station manager and salesman. During his 29 years in the Sault he saw the town grow to its present status as one of our most important northern Ontario cities.

Charlie Carrick's favourite sport is golf. Despite the fact that before he took it up he scoffed at it as an "old man's game," he is now one of its enthusiastic, and last year won the club championship.
MAPPING THE HIGHWAYS

Department of Transport, to Imperial Oil's own field force, and lastly to the mapmaking staff, who make the trips necessary to check any disputed points.

By constant checking and re-checking the margin of error is reduced to an almost vanishing minimum. The towns are properly spaced, the roads are plumb, the streams follow their appointed course. The types of roads are designated, paved, gravelled, improved, and in the western maps graded dirt roads are shown. Varying methods of presentation make it possible at a glance to differentiate between numbered Provincial Highways and County roads and through routes. So our ways are made plain for us.

In addition the map presents other details in graphic manner: signs to indicate density of population, an index for location; distances marked for certain stretches of road, important lakes and rivers and political divisions and, as an indication of the developing character of these modern road maps, signs designate the location of aeroplane and seaplane fields and bases.

To gather all these facts for a territory three thousand miles wide is no simple task, and to make doubly sure that no one has been playing tricks with details that were so sound last year makes it none the easier. Roads are rebuilt, towns and villages blossom or die, new airports develop, or have their locations changed, road angles are ironed out and distances are shortened and new highways come into being. The traveller is blissfully unconscious, but to the mapmaker each change is a new headache. Every change represents the chance for a slip, and slips are anathema to the road map maker, for they undermine the very good will for which the road map is so potent an ambassador. Last year 1,474 changes were made just to keep the Imperial Oil Road maps up to date.

In order that the last possible chance of error may be checked, a "Dummy" of the map we eventually by your guide is prepared in scale four times larger than it will ultimately appear. It is drawn in ink on tracing linen. On this all the main items that make the map are outlined, great care being taken to see that road alignments are correct. Place names are lettered in roughly to discover the position in which they are most easily read. The rough "dummy" completed, it undergoes a most exhaustive checking. Here, if ever, is the chance to make corrections. Once passed and finally approved, the "dummy" is placed over a glass-topped table illuminated from below. Over the "dummy" another sheet of tracing linen is laid, and the final drafting begins, tracing over the dummy outline.

Names and distances and route numbers are now stamped on with printer's type, in much the same manner as one uses a rubber stamp.

This draft completed and again checked for accuracy the advertising panels, covers and other printed matter are added and the job is ready for lithographing. Four separate plates reduced to scale are required to present the four colours on the map. The matter of registering these colours so that they will not overlap and confuse the detail is of vital importance. Once this is assured the presses begin to roll in earnest. They will be rolling for some time.

Last year it took 551½ hours of running time, or two shifts working eighteen hours a day for 51 days, as the two mighty presses each printing two colours at a time kept steadily rolling. The last year's total was 520,000 maps that used 25 tons of paper, all to see that you get to your destination as safely and expeditiously as maybe and with the minimum of trouble to yourself.

THE TORONTO "IMPS"

The Toronto Imps, winners of the cup presented by Hon. H. C. Nixon, Provincial Secretary, for the All Ontario Bantam Hockey Championship, are shown in the photograph above.

Last fall R. V. LeSueur, K.C., Vice-president of Imperial Oil, noticed a number of young lads chancing a puck briskly and smartly around an easy and Toronto rink and gave them some welcome encouragement. They retaliated by donning a 3-Star costume, calling themselves "The Imps" and winning the championship in their league! Recently they proudly brought the cup down to Mr. LeSueur's office and asked him to be commodore of it during the period in which they hold it.

LOOKING FOR GOLD

A diamond drilling crew is shown above sampling a new ore body in the bushland of Northern Quebec. Oil plays an important part in all stages of the recovery of gold, from early prospecting to mining the ore and separating the precious metal from the base rock.

Photograph by Photographer Arts