From the Saint Clair River 6,000,000 gallons of water are drawn into this boiler house daily and converted into 6,500,000 pounds of steam at 150 pounds pressure for use in Sarnia Refinery, the only plant in Canada large enough to consume this quantity of steam.

SINCE 1924 PROVINCIAL GASOLINE TAXES HAVE CONTINUOUSLY DEPRIVED THE CANADIAN CONSUMER OF THE BENEFIT OF REDUCED MANUFACTURING AND DISTRIBUTING COSTS

The trend towards lower costs is graphically shown in the above chart which represents the margin between the cost of crude oil and the wholesale price of gasoline. Since 1920 manufacturing expenses have been reduced from approximately 20 cents per Imperial gallon to approximately six cents per gallon and the spread between the cost of crude oil and the wholesale price of gasoline has shrunk by approximately 53 per cent, to 11.3 cents per gallon. Because of the gasoline tax the cost of gasoline to the consumer in 1912 was as much as in 1925, although the spread between the price of crude and the wholesale price of gasoline was only 13.4 cents as compared with 16.7 cents in 1925.

A significant fact which is established by this chart is that the cost of gasoline to the consumer is controlled by the producer of crude oil on the one hand and by the refining boiler on the other.
Petroleum Pete
(Just a Drop of Crude Oil)

Scene I—
The Family Home

Deep in the earth are the ancestral homes of Petroleum Pete—just a drop of crude oil—and his countless relatives. Members of the well-known Hydrocarbon Family, they actively roam the subterranean sands and porous rocks. Spaces between sand grains are their paths, faults and fissures in the earth’s crust are their highways, rocky caverns their parking places.

Scene II—
Strangers Arrive

The oil man finds Pete and his companions by drilling through the rock cap ceiling of their latest home. It is an expensive visit, the average oil well costing more than $25,000 and some $100,000 or up. Yet sometimes Pete’s family is missed entirely.

The lucky driller who opens wide the front door of Pete’s home, however, finds a hoisterous crowd rushing up to meet him. Exuberantly they travel the pipe which replaces the drill, lifted as if in an elevator by the released force of the natural gas. Sometimes the whole tribe escapes in one mad scramble. “A gas!” cry the drillers, as they guide the flowing oil into pipes and tanks. Occasionally the oil, lacking natural gas pressure, flows slowly from the well. From some wells it has to be pumped to the surface, increasing the expense.

Scene III—
New Adventures

Crude are Pete’s folk upon reaching the surface, lacking in refinements essential to usefulness. A pump boosts them along a pipe into a separator, there to be rid of natural gas and salt water. Another pump by a pump, and into a field storage tank they go. The salt water has proved to be the source of certain products, such as table salt and chemicals; the natural gas is used for heating, lighting, and as the source of hundreds of products.

Their stay in the tank is brief, for the civilized world needs vast amounts of oil. So on they go, across the seas in tanker ships, across the land in tank cars, and even underground in the safer, faster pipe lines. Eventually, and it may be days and weeks later, they are emptied into a refinery storage tank.

Scene IV—
More Travels

This stay also is brief, for people can’t use crude oil. They want refined products—gasoline for their motor vehicles, lubricating oil for machinery, fuel oil for ships, and thousands of other products.

So out of the tank and into a still goes Pete. Skimming, topping, removing the lighter fractions, oil men call this initial distillation. Heating oil releases petroleum vapor, just as boiling water leaves water vapor. Pete sees many of his relatives going up and out, headed for the condenser, where cooling changes them from vapor into gasoline, kerosene, and other liquids.

Scene V—
Acquiring Refinements

The more solid,stocky members of the family remain. These “heavier fractions” are pumped along to a cracking plant. This, Pete finds, is all that the name implies. Between intense heat and extreme pressure he does indeed crack, breaks down, becomes a particle of vapor. Then he passes through condensing coils, cools, regains the semblance of a drop, and emerges raw gasoline.
A TRIBUTE TO THE SARNIA IMPERIALS

By Ted Reeve, Football Coach of Queen's University and well-known sports columnist

WHEN the Toronto Argonauts battered their way through the Big Four Football League last autumn, and then knocked over the strongest team that ever came out of Western Canada, there was a tendency on the part of the sport fans and scribes of all sections of the country, except Western Ontario, to hand them the Grey Cup without any further debate.

Of course they still had a game with the Sarnia Imperials, champions of the O.R.F.U. (the O standing for Ontario or, as we suggested on one of our sour mornings, the Overlooked Rugby Football Union) but for some reason or other that was looked on in the light of a pushover. A few of us in Toronto sent up warming hours to the effect that Sarnia might well have beaten the Hamilton Tigers the year before and had beaten Montreal in 1933 and that the Imperials were packed with players who could catch a place on any team in the country. Or, as Jack Keefe used to say, the city either. But all such reminders were waved away with a merry laugh.

Well, Argonauts are now champions of Canada, and more power to them for they are a great team. But before they were through with the Sarnia expedition their stalwarts and supporters received the severe shock of the season. By the scant margin of one point on the score board or the even skinnier margin of about one inch on the touchline, the surging Sarnians missed out in their bid for Dominion supremacy and this operative missed his grandest chance of a lifetime to be an All American T-Told-You-So.

So for the second winter in succession the Imperials have to be satisfied with discussions on what might have been, but personally we think their football chatter should be full of satisfaction either on the matter of past performances or on the subject of the future. For the Sarnia Imperials stand today as the soldest football club in Canada and the one most certain to be mingling in Dominion championship debates of the years to come.

The Oiler are in the extremely rare position of being the one senior team of a wonderful hotbed of football, in a city where sports connections are limited enough to be very intimate and also part of a great organization in which all connections seem strong and long-lasting.

This year's lineup, for instance, was a well-balanced mixture of home brews who learned their football on the corner lots of Sarnia and other fine players who have migrated to Sarnia at various times as employees of Imperial Oil Limited and have become as comfortably settled in that hamlet as the oldest citizens.

Other senior teams, such as Dalby's Beach, have been built up in a football breeding grounds but their greatest twelve have been broken by inroads of rival clubs or by business opportunities taking players to other parts. Other senior sides have benefited from time to time by the services of some star footballers who has moved in for a season or so and then gone on his way. In Sarnia, players like Perry, Butler, Hayes, Manoore, Reeves and Smith have come up through the city leagues or collegiate teams to become the backbone of the Three Star seniors. And young men such as Stirling, Malloy, Harris, Parsons and Parsons have moved in (like many another working man who has never felt a football and, finding employment with Imperial Oil Limited, have made themselves right at home, as much members of a growing community as they are of a powerful football squad.

Any college coach would certainly appreciate a layout like the one where there are no graduations to worry about.

Sarnia started out to become famous as a hockey town and might have followed the course that brought fame to such centres as Sudbury, Stratford, Collingwood and Kitchener. Lacrosse players also sprouted on the Sarnia award as did many a baseball tender but football has become the sport with which the city is identified within the minds of the athletic followers of Canada.

More than twenty years ago that football tradition started and the name of Jack Newton, a Sarnia boy, broke into the headlines with other stars of the famous Toronto Varsity teams, of Gall and Lawson.

Then the Western Ontario football section that included London, Petrolia and Sarnia began to supply some seasons of stirring style. Teams from Toronto that invaded that sector came back with strange tales of the fast and hard football that was played by the dwellers in the Oil Belt. Finally about 1919, led by the redoubtable Dave Harding, the Sarnia team went through to the Intermediate championship of Ontario and the town definitely started on its rise to rugby greatness.

City leagues were developed and under Jack Newton, Sarnia Collegiate teams won three straight interscholastic titles over the best high school outfits in Ontario. In fact, they were finalists, we believe, for ten consecutive years and in thirteen years Sarnia teams in various classes, have won twenty football championships.

We had the good fortune to see a letter that Eddie Hanna, former McCall star, now of Montreal but apparently still a loyal Sarnian, sent to Elmer Ferguson...
IMPERIAL OIL REVIEW

prior to the Canadian final this year. We are indebted to this for a lineup of Sarnia gridiron experts who towered footballs on other fields in such a way as to reflect more glory on the old hometown. This roll of honor includes Dave Harding of Queen's, Jo-jo Stretter of Varsity, Alex Cameron of Notre Dame, Jimmy Patterson, N. Lebel, Howard Carter, Roy Brown, Poke McGibbon, Ted Kennedy, Bill Dunne, Stan Teskey, Gordie Paterson, Ted Nason, Pugh, Simpson, Spears, Bell and MacTavie.

Little wonder that the idea has spread in other parts that the school kids in Sarnia are taught their arithmetic in budules and use rugby balls for marbles.

It was in 1926 that the Imperials took the long leap to senior football and were beaten out for the Ontario Union title in a playoff with the Varsity Orphans (the best team that Varsity had that year, by the way) in the mud at Toronto.

In 1929 they went a step further by winning their group and by defeating the Baldy Beaches, whose mortgage on the O.R.F.U. title had finally lapsed, stepped in the Canadian playoffs a bit too soon and the mighty Tigers of Hamilton, then at their height, knocked them off 14-2. The next season, after that setback, proved to be one of those off-years that hit even the best of teams, but in 1931 the persistent Sarnians were back for more. They beat out Beaches in the Union final when Hugh Stirling outkicked Ab Box with a ball that weighed a couple of pounds and then ran into another disheartening defeat when they lose in somewhat disappointing fashion to Western University.

To start the 1932 campaign Pat Ouilette was appointed head coach and Art Massacci, former star of American college football, took over the duties of line coach and the Sarnia seniors really began to pick up speed. Losing only one league game, they again took the Ontario Union banner, which was becoming a habit and in the playoffs gave the Hamilton Tigers a far different fight than they had supplied them with two years before. Stage-struck at the start of that match, they spotted the Tigers two touchdowns which was a generous gesture to make to any team, let alone the Buzzerbeering Bengals. But after the first ten minutes the Imperials came to life, smashed their way through the Hamilton line and, ankle deep in mud, found themselves only a few yards from the Tiger goal line when the final whistle blew with score Hamilton 14, Sarnia 11.

This past season was practically a duplicate of the preceding one save that the Imperials had more power, more drive and more confidence. They won their league with less trouble and they came three points nearer the Canadian title after an ice-bound epic with Argonauts that supplied the greatest football of a great football year.

The climb is a long one but they are getting nearer the summit with each drive. Looking at the Sarnia team from the angle of a rival coach, one is especially struck with the strongly-balanced appearance of the squad and the wealth of reserve material that the canny Patrick has at his disposal.

Of the individual performers tribute must be paid to the one and only Norm Perry, the finest running halfback in Canada. In Perry and Dave Harding, Sarnia has had two of the All Time Greats of our game.

Ab Box of Argos is the only punter who can at present compare with Hugh Stirling and the latter

along with Claude Harris, gives the Imperials two of the outstanding secondary defence players in the sport. Hayes as a backer, Parson as a forward passer, young Butler as a great line prospect and Malloy and Harry Smith as defensive line men were others who caught our eye as really notable performers but it is really not fair to select individuals from such a nicely-welded machine.

Enough to say that the Imperials have a great tackling line and the best backfield in senior company which is certainly an ideal combination. With three quarters of the players home town boys and the rest rapidly developing into the same and with cracked intermidates and juniors coming up in bunches to replace any retiring veterans and make all regular hustles for positions, they are also an ideal outfit from a coaching standpoint.

We think that the Imperials will be the team to beat for the title in 1934. We do not say they will win it but if our Queen's team is fortunate enough to reach the G.R.U. section, we could name numerous people we would rather meet in there than the Oiler.

We like the Sarnia football team. As an alleged football student we like their dash, smoothness and team play. As a sports writer we like them because they are a colorful crew and easy to write about. As a sports follower we like them for the way they acted after that Argonaut game when, bittterly disappointed as they must have been, and tired and battered from their game struggle on a frozen field, they stepped up to the microphone, man after man, and paid tribute to the team that had just given them that heartbreaking defeat.

Sportsmen like that are a credit to any team, any town or any organization.

The steam roller is not symbolic. The Imperials rely more upon speed and passing than upon their weight.
FOR THE ATTENTION OF HOLDERS OF SHARE WARRANTS

PAYMENT of the next dividends on the stock of Imperial Oil Limited and International Petroleum Company Limited will be made to bearers of share warrants in either Company on presentation of dividend coupon number 40, which is the last coupon attached to the warrants. It follows that holders of warrants will have to procure a new supply of coupons in order to secure payment of succeeding dividends.

The Imperial Oil and International Petroleum share warrants consist of three parts. There is the warrant proper which is a certificate that its bearer is entitled to a certain number of shares in one Company or the other. Below the warrant there is the "talon". Below the talon are the coupons. The text on the talon states that the bearer will on presentation receive in exchange for this talon a further supply of coupons when those below have all fallen due. Accordinly it will be necessary for the holder of a share warrant to cut the talon away from the warrant proper and to arrange its exchange for a new talon with a new supply of dividend coupons. Most banks will forward talons for their customers. The warrant holder may himself, if he prefers, transmit the talon to the Secretary of the Company whose share warrant he holds. He should address the Secretary, Imperial Oil Ltd., 36 Church St., Toronto, Canada, or the Secretary, International Petroleum Co., Ltd., 36 Church St., Toronto, Canada. It is important that talons be forwarded by registered mail and insured against loss in transit.

There are three important things the holder of the share warrant should remember in effecting an exchange of talons. First, he should see that all coupons are detached from the talon. If he has collected his dividends as they have fallen due only one coupon will now remain attached to the talon and that is coupon number 40, upon which payment of the next dividend will be made. Secondly, he should detach the talon from the share warrant proper and should turn it over to his bank or mail it to the Secretary's Office of the Company concerned. He should not send in the share warrant or any coupons. Thirdly, the talon should be accompanied by the name and address of the party forwarding it. Exchange of talons from Imperial Oil share warrants will begin on March 1st. and exchange of International Petroleum talons will begin on March 15th. Warrant holders are requested to deliver talons to the Secretary's Office of either Company as soon thereafter as is conveniently possible in order that the work, which involves an enormous amount of detail, may be carried through as expeditiously as possible.

Warrant holders are reminded that certificates with talons detached are not good delivery. Therefore, the warrant holder is going to surrender it either to his bank or to the Company's office for exchange. It will also be necessary for the warrant holder on receipt of the new talon, which will bear a number corresponding to the number on the warrant, to pause the new talon in proper position on the warrant in order to make it good delivery. There will be a gummed strip on the new talon for this purpose.

NATURAL GAS IN PERU

GASOLINE plant activities were started in Peru shortly after the World War and in comparison with the present day Gas Department the first installation was modest indeed. Near the present town site of Lagunitas, a small 40 H.P., engine, together with a compressor was installed; to this a second unit was added, and after six months of operation the production from these units amounted to about 400 wine gallons per day.

The outcome of this small venture was sufficiently encouraging to cause a general survey of the gas situation of the field; this took place during the years 1922 and 1923 and as a result the plant known today as 38 Plant was constructed. The compression type of installation was used and in two years time the plant was increased to six 200 H.P., engines and compressors. The results of this plant were encouraging. The following year saw the conversion of 38 Plant from the compression type of recovery to what is known today as Mineral Seal Oil absorption. This procedure more than doubled the output of the plant, production now ranging between 6,000 and 8,000 gallons per day.

It is interesting to note in this connection that the 38 Plant site is about one mile from the sea and that the sea water level within the plant yard is about 18" below the surface and the soil consists entirely of sea sand. Notwithstanding these foundation conditions, moving machinery and other equipment have shown no indications of sagging or elevating from their original positions. Due to the high flood waters of 1923, 38 Plant was incapacitated for about 4 months. After the water subsided a permanent 30 high concrete dyke was built around the entire plant, and pumps are now so located that a similar flood would not interfere with normal operations.

A heavy programme of construction was completed during the years 1926 to 1929, and as a result there are now 8 gas plants in the field. Three of these plants, namely, 38, Lomitos and High Veracun are of the absorption type and comparatively large; from these three plants Mineral Seal Oil is pumped to the outlying plants so that the natural gasoline can be extracted. This oil is then pumped back to the three central plants for stripping. The outlying plants referred to have been called remote absorption type plants. Following this plan of centralization, electrical energy is likewise generated at the three central plants and transmitted by high tension lines to the outlying stations.

In 1928, a gas repressuring programme was undertaken and this activity has been elaborated and developed to a point where over 60% of the gas produced is now returned to the producing horizons. Results of repressuring have been very gratifying, and it is believed that due to this programme fuel gas for the Refinery at Talara will be available up to the depletion of the oil field. Pressures as high as 1,000 pounds to the square inch are used in gas plant work.

The raw gas gathering system has been made very complete and as a result no gas is wasted to the air. The system of separating gas from the oil makes it possible that all the gas can be saved and that the crude oil at no time is exposed to the atmosphere, thus eliminating all evaporation losses. From a gas conservation standpoint this field is probably not excelled.

Mr. R. E. Trammell, Superintendent of the Gas Department, together with his assistant Mr. H. W. Watts, direct the activities from a central office located at Negritos.
THE MARINE DEPARTMENT

The moon circles about the earth at the respectful distance of 240,000 miles. This may seem insconsiderable to astronomers who measure celestial space in terms of light years, but to anyone contemplating such a journey it would seem far enough. In the course of a year's operations the ships of Imperial Oil and International Petroleum fleets travel a distance equivalent to more than four trips from the earth to the moon and like the moon they operate on an exact schedule of time. Unlike the moon, however, each is a comfortable place of abode for a crew numbering from eleven on small lake and coastal vessels to forty-four on the seagoing motorships and steamers. Each vessel is at once an efficient instrument of transport and a completely integrated miniature community with its general and departmental governments and with all the appurtenances necessary to house and feed and provide for the well-being of its complement of officers and men.

H. J. Rabbitts

There are twenty-four ships in the fleet, not to mention river boats and barges employed on the Magdalenia River in Colombia. The investment in these vessels totals more than seventeen million dollars and their crews aggregate approximately 700 officers and men. Their annual operation entails an expenditure of several millions of dollars.

It is not generally realized how efficient an instrument the marine tanker is nor does the man in the street know how exacting is its schedule of operation. As one of many available illustrations of this fact it may be cited that the C. O. Stillman, which is the largest vessel in the fleet—wälse as the largest oil tanker in the world—when fully loaded with 5,810,000 gallons of oil can travel 2 miles on one barrel of fuel. In spite of her 585 feet of length and her loaded weight of 34,000 tons, it takes only 35 gallons of oil to propel her that far. Another indication of the efficient performance required in tanker operation is shown by dock reports. For instance, in the course of three calls at Mamonal terminal in Colombia last year the Montebello did not vary thirteen minutes in the time elapsing between picking up the pilot inbound and dropping him again outbound. In one case her port time was 14 hours and 50 minutes and in another, 15 hours and three minutes, and in the third, 14 hours and 51 minutes. There was a variation of only four minutes in the loading time. Her best loading time was 12 hours and ten minutes, and the longest was 12 hours and 14 minutes, each cargo consisting of approximately 4,025,000 gallons.

The continuous and efficient operation of the fleet depends on a large measure upon the capabilities of the individual masters, engineers, officers and crews, but there must of course be an organization for general direction and management, and this is comprised by the Marine Department. The Marine Department occupies offices on the fourth floor of the Company's executive building at 56 Church Street, and this floor is sometimes facetiously referred to as "the quarter deck." The Department was organized in 1921. Prior to that the Company owned only six small lake tankers, but in 1921, two 12,000 ton tankers and two 15,000 ton tankers were purchased and with the further expansion of the fleet the Department has continuously grown and now comprises four divisions with an office staff of 33 persons. These divisions are the Construction and Repair Division, the Operations Division, the Traffic Division and the Accounting and Finance Division.

The functions of the Construction and Repair Division are clearly indicated by its title and its concern is with preparations of plans and specifications for new ships when such are required; with the supervision and inspection of such ships under construction; with supervision and inspection of repairs to vessels, etc. When an addition to the fleet becomes necessary, many essential features come up for discussion. If the new vessel under consideration is not to be a sister ship to an existing tanker, (and with the steady advance in marine engineering sister ships are seldom built), much time must be spent in outlining fundamentals and details of design. By a process of trial and error with drawings and with models a design is finally arrived at, but few people realize how much is involved in preliminary considerations. To construct a tanker such as the Calgarolette for instance, entails not only a very large expenditure but more than a year of building. Over five thousand tons of steel went into the Calgarolette, and her structural members are bound together by one and a half million rivets.

Repair work is continuously in progress. Oceangoing vessels are dry-docked every six months for repainting of the hull and inspection. Specifications of work to be performed are prepared by the Repair Division of the Marine Department and tenders for the work are called for from the various shipyards in the vicinity where the vessel will be docked.

The first thing to be done when a vessel is being placed in service is to arrange its personnel. This entails employment of a master, chief engineer and junior officers and engineers, together with the members of its crew. This selection of personnel is one of the duties of the Operations Division. Then of course it is necessary to provision and bunk the vessel for the contemplated voyage, and to make arrangements for clearances, consular documents, etc. The Operations Division carefully checks reports of loading and discharge, and should discrepancies occur they are care-
fully investigated. They also check time allotted for loading and unloading, and they go over the abstractions of the ships’ logs which detail every move made by the vessel while at sea. They also are charged with the responsibility of providing hospitalization, medical attention, etc., for any members of the crews who may become ill.

Functions of the Traffic Division are making freight rates, the preparation of estimated costs of proposed voyages, preparation of charters and contracts and the allocation of vessels to the various trades.

The Accounting and Finance Division is responsible for matters pertaining to insurance, disbursements, collection of freights, accounting, statistics, office and ships’ personnel records and clerical and office service for the Marine Department.

Operations of the Marine Department reach farther afield than those of any other department in the Imperial Oil organization. This is so because Imperial and International tankers are used not only to carry crude from producing fields to the Company’s refineries; they engage in world trade. Early this year the master of one of the Company’s large tankers was in Toronto for a brief holiday. He left Toronto for Halifax, where he was to resume command of his vessel. From Halifax he was bound for the Dutch West Indies, and thence to Algiers. Where he may go from Algiers he does not know. In the course of a year the Imperial or International House Flags will be seen in some thirty ocean ports in probably as many as fifteen countries. Callao in Peru, Antofagasta in Chile, Aruba in Venezuela, New York and San Pedro in the United States, Southampton in England, Balboa in the Canal Zone, Campana in Argentina, Bremerhaven in Germany and Saint Thomas in the West Indies, are only a few of the foreign ports in which Imperial ships docked during 1933.

A tanker spends most of her time at sea. Here is a representative record of one year’s operations by one of the Imperial vessels. She was 203 days and 18 hours steaming at sea. She was in port for 47 days and 4 hours. She was dry-docked for 15 days and 4 hours. Her year’s operations covered a distance of 67,449 miles. But every day during the year the Marine Department is closely in touch with each vessel for wireless communication is an important adjunct to successful and efficient operation.

The Marine Department from 1921 until July 1st, 1931, was under the management of W. B. Ellsworth, now one of the Company’s annuitants. H. J. Rahalves succeeded Mr. Ellsworth on his retirement, and J. E. Langdon followed Mr. Rahalves as assistant manager of the Department. The Department has its representatives at Barranca-Bermeja on the Magdalena River in Colombia, at Talara in Peru, at Halifax, Montreal, Sirius and Vancouver. These representatives take care of turn-around, personnel, repairs, inspection and all other matters pertaining to the maintenance of a high degree of efficiency.

Throughout the Christmas holidays the head offices of Imperial Oil at Sirius were a gala display of evergreen and colored lights.

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EMPTY BARRELS

An amateur explorer finds it disconcerting to discover Imperial Oil drums have beaten him to the Far Places.

By A. J. Dalrymple

This little Eskimo never had a scooter, or a bicycle, or an express wagon, but as long as he finds an empty oil barrel to play with he is completely happy.

The stunning brilliance of midsummer sun drove down with tropical intensity. Black clouds of man-hunting mosquitoes marshalled their forces and attacked in concert from all directions. There was no sound in all that marshland save the drone of meat-hungry insects.

Four human beings were struggling through the swamps of the Barrens 60 miles southeast of Churchill: Arthur C. Twomey, ornithologist, of Edmonton; Miss Margarette Heydeyewiler, student of bird life, Rochester, N.Y.; C. V. "Hukey" Harris, oil-time trapper of the North-West Territories, and the writer.

We were exploring a land bereft of vegetation except reindeer moss and stunted Arctic willow. Of habitation there was none in all that vast expanse.

After a week on the trail the sight of a hunter’s cabin would have been welcome. Then, just as we topped a gravel ridge and peered through the rising muskog mists, sure enough, away below on the horizon, stood a little shack. Plunging forward we headed for the haven, at least it would be a rest from beating off flies. As we approached, it mysteriously took the form of a silo in the fog. A few minutes later we pushed it over. It was an empty Imperial Oil barrel.

We set down.

“How is it,” mused Twomey, “that everywhere you go in this country you bump into empty barrels.”

“How did this one happen to be here” speculated Miss Heydeyewiler. “It’s a million miles from nowhere.”

We looked around, and then walking back, discovered a possible explanation.

Along the coast a gravel ridge rises slightly, and then drops gently down for miles into the interior. Bits of driftwood, including squared timbers, and part of a lifeboat were lying near the top.

Harris recalled that some years ago a government tug had been beached in a gale, and had lost a portion of cargo and gear. An exceptionally high tide must have thrown the barrel over the rise, and sent it rolling down hill to come to rest far from the coast.

The subject of barrels persisted.

We wondered if, somewhere in some far-off city, executives and clerks would at that moment be figuring the cost of barrels, and plotting graphs showing the number manufactured, the number shipped, and the number that never returned.

The sub-Arctic traveller finds the gasoline barrel nearly always in evidence. There are usually a couple of drums in the bottom of the canoe, or several cases of
S.-gallon tins. They make smart dinner tables on the trail, but it's no rest-cure packing them over the portages.

At Churchill last summer, Captain Leman F. McKinnon, manager of Transport Limited, Imperial Oil agents, and the writer went beach-combing down the coast. We started talking about barrels. There were so many empties we stopped in our tracks to see who could count the most without taking a step. They were lying on gravel heaps, in the scrub, in the little muskeg lakes, and among the rocks. Captain McKinnon counted 37, and I counted 57. Then when he found that the one which put me ahead, had the top hacked out and had once been used as a camp stove, he claimed I couldn't count it as a barrel. So the argument ended in a draw.

Then we climbed Cape Merry where we ran across 147 barrels in one heap. They had been placed there by Dominion Explorers when that
government survey vessel was at Churchill. Imperial oil and gasoline had been shipped to police and radio stations at that point and as the vessel could not approach the shore where the barrels were landed they were unloaded on a saw, put on trucks, and carted away.

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It is a simple matter with a cold chisel to cut a square out of the top, and then lift same, and with a hand saw cut out the bottom. Then add four sturdy steel straps right in the center of the barrel. Then apply a rope and a long curved load on the end, and your barrel is ready to go. This is a hazardous procedure, however, and not to be recommended. Any engineer used for gasoline should be thoroughly cleaned or he will not do his trick. The inside of all barrels should be cleaned before they are shipped. All barrels should be cleaned before they are shipped.

At Chesterfield Inlet, the Eskimos are more primitive. They just rip a barrel straight down the side and spread it open like a book. Then they make a ground fire of dry moss and sit around the open side.

Eskimos use all the barrels they find. At Chesterfield they had them filled with seal oil, blubber, fish, dog food, and milk. The old scraps of metal from fuel barrels also contribute to the manufacture of shovels, saws, axes, hoes, buttons, latches for doors, repairs for boats, and many other things.

One Eskimo on the west coast proudly showed me a spear he had made from scrap from a barrel. It was

Eskimos loading empty barrels aboard S.S. Ocean Eagle, federal government survey vessel, at Chesterfield. Imperial gasoline and oil has been shipped to police and radio stations at that point, and as the vessel could not approach the shore, the barrels were landed here, loaded on a saw, and carted away.

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Eskimos in whale boat loading empty barrels along the west coast of Hudson Bay.
A History of Map Making

The earliest map of America was drawn by Juan de la Cosa, who accompanied Columbus on that daring voyage in 1492 which resulted in the discovery of America. He was the owner and captain of the Santa Maria and his process as a navigator rivaled that of Columbus. De la Cosa belonged to a family of navigators, and made charts of his voyages. He even went so far as to draw a Mapa Mundial, or map of the world, which he presented to Isabella of Spain. In 1499, on his seventh visit to America, he was killed at Cartagena.

Found in a bric-a-brac shop in Paris in 1832, de la Cosa’s Mapa Mundial is now one of the treasures of the Spanish Marine Museum at Madrid. It is drawn on two sheets of parchment and measures about five and a half feet by three feet. It is richly illuminated in gold and almost every color, except black. The extreme care of the cartographer is shown in the beauty and distinctness of the inscriptions written in colored inks. Where they do not interfere with directions, buildings and other objects denote the more important cities and ports, and each kingdom has an effigy of the reigning sovereign.

De la Cosa must have been acquainted with the voyages made by Sebastian Cabot in 1499, for he shows a crude outline of the “Sea discovered by the English,” the coast of Nova Scotia and Labrador. The first map to bear the name “America” was published in 1509 by Waldseemüller, a professor of cosmography in St. Die, France.

Now that the new continent was a fact, or perhaps because of a very human desire to see for themselves whether or not it existed, other navigators were exploring. From 1500 to 1525 adventurers from Portugal, France and Spain visited Canadian waters. New maps appeared which outlined, more or less approximately, the shores of the Maritime Provinces and Labrador.

The most important of these is perhaps that drawn by Vesconte de Maggadão, of Genoa, representing the Canadian coast as described by Verazzano who explored it in 1524 for the King of France and gave the country its first name, “New France.”

In 1557, an Englishman, Robert Thorne, produced the first Universal Description, with a notations along the Canadian seaboard to the effect that this land was first discovered by the English, which brings us back to the Cabots. Sebastian Cabot was responsible for a map published in 1544, which is interesting from a Canadian point of view because it purports to indicate the point where John Cabot, father of Sebastian, first saw land on the American continent, apparently near the northerly extremity of Cape Breton.

In search of material, the writer was privileged to visit, in company with the custodian of maps, a certain attic in the beautiful Library of Parliament at Ottawa. It was lined from floor to ceiling with portfolios of maps, all the world’s maps. The custodian remarked pensively, “Canadian Maps? Yes, I think these will be of interest to you.” He reached down a ponderous tome, laid it on the huge table, opened it, and under the spell of his quiet voice the attic walls faded, consciousness of time vanished and the early days of Canada came to life. It was not only a history of map making, it was a history of our country, graphically narrated by one who from his intimate knowledge of those times might have sailed up the Saint Lawrence with the first explorers.

First we followed the spidery sketches of Jacques Cartier, painstaking reports to his Sovereign of the long voyages on the Plains of Canada, and the letter in search of the northeastern way to the Orient. Cartier’s discoveries are embodied in the Harleian Mappemonde, about 1611, the Des callers Mappemonde and the Vallard Map of 1564.

Some of the maps were too large even for that table and had to be studied in installments. As the pages turned, more great names appeared—Champlain, La Salle, Père Marquette, La Verendrye—all those who ventured into that unknown territory full of real dangers and imaginings almost more fearful. The records spread north and south of the river, but still the line continued westward. The Great Lakes appeared, grotesquely at first. Warnings as well as encouragements were sometimes inscribed. Notations such as “Tigers here,” “Savages,” “Good Hunting Grounds.” “The fishing is excellent here,” “Silver mine”, together with a delightful margin of guesswork—so to distances, made the “touring information” of those days exciting if somewhat misleading.

Champlain, who was a royal geographer as well as an explorer, made the first accurate map of Canada, in 1607, but did not publish it. Lescarbot, however, who had been in Nova Scotia, went him one better and in 1609 printed a good map of the country. Sir William Alexander published a book entitled “Encouragement to Colonies”, containing a map of Nova Scotia.

Up until 1763 the end of the French Regime, maps of Canada were made by explorers, traders, missionaries and engineers, men like Bourdon, Calmette and Joliet. The latter has the distinction of being the first Canadian-born cartographer, having studied at the School of Hydrography at Quebec.

French engineers, among them Franquelin and Villeneuve, visited Canada and made excellent maps, while the royal cartographers of France prepared maps based on those made in Canada and on reports of explorations. One extremely important map completed by the French engineer De Catesbou in 1708 shows all the seigneuries between Quebec and Montreal at that time.

The first English-made maps and charts of Canada were prepared by the draftsmen who accompanied naval and military expeditions. The first of these cartographers was Captain Hammond of the Royal Navy, and the soundings taken by him greatly assisted Captain Cook in making his famous charts of the Saint Lawrence. One of the engineers at Wolfe’s army, Captain Samuel Holland, became the first Surveyor General of Canada and head of the cartographic department. With the assistance of Captain Des Barres, he prepared a large scale map, 40 feet long, comprising all of Canada then inhabited.

Map making in Canada had begun in earnest, Captain Holland’s work was followed and captains of ships and maps prepared by the staff of the Royal Engineers, and especially noteworthy is the work done by Captain Des Barres. The next important step was the division of the country into counties, in accordance with the Constitutional Act of 1791, and from that time on, the mapping of Canadian territory has been a continuous process. The fourth and final article of this series will deal with modern map making, particularly the air mapping of Canada’s great Northwest.
A VISIT TO SARNIA REFINERY

EXTENDING for nearly two miles along the Canadian shore of the St. Clair River is the Sarnia Refinery of Imperial Oil, Limited. It covers an area which, if divided into building lots, would accommodate a city of 10,000 people, and its electric plants generate sufficient power to look after the needs of the same number.

This refinery began operation in 1897, with a small plant and a handful of employees. Now it is the largest oil refinery in Canada and one of the largest in the world. Its staff now comprises over 1,700 persons and manufactures over 700 different products.

A trip through this refinery—threading the maze of tanks, cracking coils, stills, bubble towers and other equipment, watching the tank cars and tank ships loading, visiting the power plant and offices and peering at the mysterious goings on in the laboratories—would take several days. But the photographer has come to our aid and we will endeavour to show our readers some “close-ups” of what goes on in the biggest and oldest of Imperial’s seven refineries.

Tanks are impressive appurtenances of an oil refinery. At Sarnia there are nearly a thousand of them, ranging in size from 11½ x 20’s to giants like those pictured above. Some idea of their capacity may be obtained from the fact that the total tankage would hold enough water to supply a city of 2,000,000 people for a day.

All operations carried on in the cracking coils, bubble towers, vacuum stills and other giant equipment of the refinery are also carried on in miniature in the laboratory. Thus the efficiency of the plant is constantly tested and the excellence of Imperial products maintained. This is William Mate checking the process by which Imperial Marcelube Motor Oil is distilled.

Nothing is left to chance. On its way through the plant, every ray of gasoline and kerosene is examined for impurities. With the aid of these fantastic appearing bottles, Gordon Paterson detects the least sign of sulphur in these products.
Modern industrial plants, with their intricate robot-like machinery, have equally intricate lubrication problems. One of the many duties of the general chemical laboratory at Sarnia Refinery is the solution of these problems, as well as suggesting how, by proper lubrication, to prevent their occurrence. Although the information they have to work on is often meagre, sometimes they can point out the very man who threw the monkey wrench into the machinery. Elementary, my dear Watson!

William Howard McCulloch.

From the cracking coils where it has been separated by means of terrific heat, often as high as 1000°F., and pressure as great as 1000 pounds to the square inch, the distillate destined to become gasoline goes into the re-trn stills, pictured below. There, with the aid of chemicals and a special kind of clay, it is redistilled and comes out clear and sparkling, ready to turn into the power that drives your car.

Backstage at one of the cracking coils. There are six of these wonderers at Sarnia Refinery, each with a daily capacity of from 1,500 to 3,000 barrels of "fresh feed". Their rations of gas oil and reduced crude from the distant storage tanks are fed to them through pipe lines and controlled by means of these valves.
From storage tanks containing the finished products ran the pipe lines, concentrating at the loading racks above the railway sidings. Here you see a line of tank cars waiting to convey these products to their various destinations—big power plants, industrial centers, farming communities, highway construction jobs or the bulk storage supplying the service station where your car is fueled and lubricated.

After all the gasoline and naphtha, the kerosene and fuel oil, and the lubricating oils have been distilled from the crude, there remains a hard, dull black substance called coke. Not only is it an excellent fuel, but in its powdered form it is used in the manufacture of batteries, carbon lamps, crucibles and other articles.

ON MARCH 26th, 1931, there passed away in Honolulu, at the age of 87, a Trappist monk known as Brother Joseph, whose family name was Ira Dotson. By his devotion to the undertakings of the leper village of Kalawao, on the Pacific island of Molokai, Ira Dotson is known as one of the great humanitarians of modern times. He was born in Stowe, Vermont, and went to the leper village in 1886, a comparatively young man, never to return. In 1861, he enlisted as a private in the Thirteenth Wisconsin Infantry for service in the Civil War and won promotions to the rank of captain. After the war, Brother Joseph, still Ira Dotson, engaged in business and settled in Memphis, Tennessee. He was successful and led an active social life until 1883 when he suddenly fancied the world and entered the Trappist Monastery at Cetinaunam, Kentucky. There he first heard of the sacrifices of Father Damien among the lepers of Molokai. He wrote to Father Damien and a few months later he was on his way to that little island in the Pacific. That was in 1886. Three years after his arrival, upon the death of Father Damien, he became administrator of the work of the colony, developing a clean, wholesome appearing city. When the Atlantic Fleet made its tour of the world in 1908, the United States Government used it to signal honor Brother Joseph because of his service to humanity, the fleet, under command of Admiral Charles S. Sperry, making a trip from Honolulu harbor and parading with flying colors before the leper colony—an unparalleled tribute to a life consecrated to the highest form of service.

The spirit of service, although perhaps not always of such a heroic character, is exemplified in the life of the Trappist the world over, whether it be at Mont-des-Cats in Northern France, a landmark enshrined in the memory of veterans who survived the early stages of the Great War, or at La Trappe, in the Province of Quebec, where Trappist priests and brothers for more than half a century, have devoted their lives to the development of specialized agriculture and the training of the youth of the Province in agricultural pursuits.

The origin of the Cisterian Order, whose members are popularly known as Trappists, carries us back to the days of romance and chivalry in medieval Europe. It began in those ages of deep, purposeful faith, when kings discarded their crowns, when princes of church
and state put off the purple, when eminent statesmen tired of the bustle of secular affairs and retired into some monastery in France or Germany or England to spend the evening of life, and when young men, visualizing the eternal verities in all their stern reality, forsake pultry interests and passing enjoyments for things more enduring. Actuated by such motives, Robert, Abbot and Stephen, in the year 1098, with due authorization, left the wealthy Abbey of Molesme in which they had made their monastic profession and took up their abode in the retired valley of Citeaux in north-eastern France with a view to leading a more perfect life. Thus originated the Cistercian Order.

Of all the Abbeys founded from Citeaux, that of La Trappe has in later centuries been the most widely known, so much so that all the religious of the strict Cistercian observance have been called Trappists. This wide-spread renown of the sorely tried but eventually triumphant Abbey of La Trappe is due principally to the uncompromising reform which its Abbot, the famous De Rance, adopted about the end of the 17th century. A hundred years later, when the French Revolution had subsided and the nations of Europe had regained something of their former stability, the members of the Congregation of La Trappe increased twentyfold.

In Quebec, near the little village of Oka, where the air is scented with the fragrance of countless pines which cover the adjoining hills, overlooking the glistening waters of the Lake of Two Mountains, isolated in a wild beauty of primitive grandeur, yet only 36 miles from the throbbing heart of Canada’s metropolis, lies the Abbey of Our Lady of the Lake, commonly called La Trappe. Its history is one of romance and wonderful achievement. In 1881, from the Monastery of Bellefontaine in France came a group of Cistercian monks to take possession of a tract of virgin forest land which had been donated to them by the Euphrasian Fathers. Ten years later, in 1891, the monastery was made a Priory, then an Abbey. Today, after a four mile drive from Oka, the monastery grounds burst unexpectedly upon the vision of the traveller: the Gothic Abbey, the farm with its modern Agricultural College and dependencies, all flanked by stately fields of grain or verdant pasture lands, by maple groves and apple orchards.

They do not only make cheese at La Trappe, although Oka cheese is highly esteemed by connoisseurs from far beyond the confines of the Province of Quebec and Canada. Their barns, poultry houses, orchards and truck gardens are models of their kind and afford every opportunity to the agriculture expert as well as for the practical development of the young farmer. The dairy herd consists of over 200 head of cattle, most of them Ayrshires, and the Trappists have been responsible for the importation into Canada of some of the finest cattle with recognized
world records in the production of milk and butter.
Brother Isidore, at the head of the Animal Husbandry Department, is a breeder who enjoys a reputation which is as great in Scotland, the United States and all over Canada as it is in the Province of Quebec. The Poultry Department has at its head Brother Wilfrid who is known as the creator of the Chantecler, a breed of poultry which today occupies an enviable place in the estimation of poultry experts and fanciers both in Canada and the United States.

Father Athanase, in the horticultural field, is the creator of the luminous Oka melon, which is as much in demand as the famous Montreal melon. When it first appeared on the market, one leading Montreal hotel contracted for the whole output for three years.

In other phases of the farm's activities the same degree of perfection has been attained and each monk is a specialist in his line, many of them being graduates of Cornell, L'Institut Agronomique de Paris and other leading institutions. The Director of the Agricultural Institute is a distinguished pomologist. He has also acquired a wide knowledge of gladiaus varieties, and does outstanding work in the development of this lovely flower which he cultivates on the college grounds.

One of the vacation classes held for teachers of religious and normal schools.

The Trappist's daily avocation is threefold: prayer, work on the farm and study. It is above all a life of devotion and within the walls of the Abbey of our Lady of the Lake there are men who in other walks of life, had they so chosen, would have left a mark of distinguished and efficient service. The guest who has spent a few hours at Notre Dame du Lac will always remember it as essentially an Abbey, for when the day's work is over and he hears the Gregorian even-song within the walls of La Trappe, he cannot help but feel that these men who live their lives according to the strict rules of Citeaux, but whose faces radiate and whose voices express happiness and security, have chosen what to them at least is the better part.

Founded in Canada about the same year as Imperial Oil, it is a natural corollary that the Trappists should be, as they have been for many years, satisfied users of Imperial products and when a few years ago Imperial Oil undertook the translation into French of "Field and Farm Yard" it was only natural likewise that it should look to the Trappists of Oka for many articles and illustrations for the adaptation of this farm book to the needs of the Quebec farmer.

That was in 1913. Enthusiasm, hard work and ability soon focussed attention on the young recruit. In 1918, he led the salesmen's carload contest and was a member of the team that won the Dominion Automobile Oils Contest. The West was developing rapidly and the demand for petroleum products was steadily growing. To take care of the increased business Edmonton Sales Division was constituted with Mr. Frank Turley as manager and Mr. Halverson as assistant manager. In 1921, he was transferred to Winnipeg as assistant manager and there he worked again under his former chief, Mr. Boyd. During the absence of Mr. Boyd he became acting manager and led Winnipeg into first position in the Dominion Automobile Oils Contest.

His gift for organization resulted in his appointment the following year as assistant general sales manager for western Canada with headquarters at Winnipeg. Later he spent some time in British Columbia on special work and two years after came to eastern Canada on another special mission of organization. In 1926, he was loaned to an important United States oil company to assist in a reorganization and when he returned to Canada his office was transferred to Toronto and he became general sales manager for all Canadian territory west of Fort William. Twice since, his expert services were requisitioned by foreign oil companies. He spent several months in England in 1931 and in 1933 was sent to Australia.

As general manager of the marketing department, Mr. Halverson has heavy responsibilities but they do not burden him. Work, he says, is delightful and zestful. It's worry that kills. He has an orderly mind. In studying any problem he resolves it into its essentials and systematically interprets and adjusts these so as to get...

(Concluded on Page Thirty-nine)
On June 30, 1935, C. O. Stillman retired from the Presidency of Imperial Oil Limited. On November 18, Mr. Stillman passed away. The Editor of the REVIEW derives satisfaction in reflecting upon the fact that on his retirement this magazine carried a full story of Mr. Stillman’s life-long connection with the oil industry, particularly his many years of service with Imperial Oil. His accomplishments as an officer of the Company, and the regard felt for him personally by his fellow-workers and associates as well as those with whom he came into contact outside of the oil business were the subject of articles in previous issues of the REVIEW. Under his leadership the Company weathered many storms, and even after his retirement Mr. Stillman was at the service of those who sought his advice and the benefit of his wide knowledge.

"'A good executive? Yes, but it’s the man that we miss.' The words were not spoken of the late Alexander Murray McQueen. But no words express better the sense of loss which his death has brought to all who knew his friendship. As Vice-president of Imperial Oil Limited, A. M. McQueen established his right to the title he had earned in a career of achievement at home and abroad. This son of Petrolia was a great executive; but he was more than that. There are, have been, and will be many great executives in Canada and elsewhere. That country and generation is fortunate that can boast even a few men with the generous human qualities that were Alexander Murray McQueen’s."

—From the GLOBAL, Toronto, December 6, 1935.

Mr. McQueen, who with Mr. Stillman retired from active service with the Company on June 30, 1935, passed away on December 4, 1935.
FROZEN IN

WHEN Hubert Ellener, pressure still operator at the Sarnia Refinery, set out in company with nine friends on a hunting trip into the Parry Sound district one day last November, he little knew the scurril trick that was to be played on him by premature Winter weather. As a hunter, he was prepared for the usual hardships of the chase, but he could not foresee the painful personal injury, the sudden isolation from the outside world and the thrilling attempt at rescue by aeroplane, tug and canoe which were to make this expedition a never-to-be-forgotten one for himself and his companions.

In addition to Mr. Ellener, the party was composed of his brother, James A. Ellener, four other Imperial Oil employees—William Richardson, Harold Fowler, William Finn, Walter Dove—and four friends from the Sarnia district. The trip to Parry Sound was made by motor car, and upon arrival there the hunters transferred their equipment to a motor launch and negotiated the 28 miles through the islands of Georgian Bay to the Moon River.

The Parry Sound district is probably the most popular deer hunting region in Ontario, and our hunters had gone through the period of time which has been written about in the literature which has been written about the Parry Sound district. In history, it took the hunters completely by surprise and placed them in an awkward position, depending as they were on a motor-launch to return to Parry Sound. The Moon River was frozen to a depth of approximately four inches, so all hope of water travel was out of the question. MacTier on the C.P.R. lay 16 miles distant and if this point could be reached a train would take them the rest of the way to Parry Sound. An overland hike by the rough trail which existed seemed the only course to pursue, and accordingly an early start Thursday morning, the 16th, was planned.

Everybody was up before daylight making last minute preparations. Then misfortune occurred. Hubert Ellener stepped outside the door of the cabin which was built on rock of a sloping formation, slipped on the thin coating of snow and ice which had formed during the night, and fractured his right leg just above the ankle.

At first, the hunters did not realize the predicament in which this unfortunate mishap placed them. James Ellener, brother of the injured man, put his knowledge of first aid to good use and successfully reduced the fracture of the large bone in the leg, but it was clear that the smaller bones could only be set with the assistance of an X-ray. Thus the necessity of transporting Ellener back to civilization became urgent, and the difficulties to be overcome very apparent. They could not carry a man of heavy build suffering from a broken leg 16 miles through the bush. Help had to come from the outside.

Getting a message through to the outside world was almost as difficult, as reaching it physically. Fortunately, a mile and a half away there was a resourcefulness and knowledge. There were no less than seven portages over rock and fairy-tied islands, three of them averaging a half-mile in length. At some places to get their canoes into the water they had to cut through ice inches thick that had gathered around the shore. There was one stretch of about four hundred yards where the going was particularly hard and the canoes were either used as miniature ice-breakers or dragged over the surface when the formation was strong enough to bear their weight. At length they reached the Georgian Bay level of the river and found it entirely frozen over, so canoes were abandoned, pack sacks shouldered, a trek through the bush of a mile and a half brought them at 5 p.m. to their destination.

Ellener was bearing up well but was suffering considerable pain. Nothing could be done that night, but the following morning everyone was up and came to a stop at a camp site about a mile and a half away. At this point a temporary shelter was constructed of logs and covered with a tarpaulin. Then the party divided, the men taking the canoe to the landing and the women setting about the camp work. It was decided to leave the party there, and the boat continued its journey to the north.

On Friday evening a new plan was formulated. A company official telephoned J. J. Walker, Imperial Oil agent at Sarnia, informing him of Ellener's plight and hoping that he might be brought out by canoe and sleigh. Mr. Walker, an experienced canoeist and woodsman, believed that it could be done, and promised to get under way the following morning. Preparations were completed by 11.30 that night and at 4 a.m., Saturday, Walker, with his two sons Tom and Reg, and A. McNel, country prospecter, loaded canoes, axes, ropes and pack sacks on a truck and were off. They drove to a point about three miles southwest of MacTier and here at the end of a passable road they transferred their equipment to horse-drawn sleigh and proceeded to the camp of Thomas Teeple, one mile above Caven Falls on the Moon River, arriving about 10.30 p.m. Teeple was well acquainted with the country and arranged to act as guide to the expedition. The water at this point was not yet frozen because of the strong current, and the three canoes were soon loaded in shipshape fashion and floated.
After the fire was nearly repaired, Capt. Hand decided that the lake was so deficient in landing-space that the oil could not be taken off with an added load. The ice on the river was tested and found solid enough to bear the plane's weight so the Captain manoeuvred his machine successfully into the air, cleared the trees tops nicely and made a perfect landing on the river two hundred feet from the camp. Ellener was ready fully-dressed for the trip, and was made comfortable immediately in the large cabin plane. Then the propeller roared again and the journey of nearly 120 miles back to Toronto was completed in exactly one hour. An ambulance was waiting to rush Ellener to the Western Hospital, where on Monday, afternoon, four and a half days after the accident, the injured hunter finally received medical treatment. The X-ray revealed that the fracture of the large bone had been reduced very well but that the three small bones in the ankle and a small one in the leg were still unset. Tuesday evening saw the convalescent hunter in his home again, none the worse for his experience, thanks to the sixth attempt at rescue which was successful after five others had failed.

The rest of the hunting party reached their homes safely also, most of them hiking through the bush to MacTier, thence by train to Parry Sound and by car to Sarnia. Mr. James Ellener, who stayed at the camp until his brother was removed, expected to be taken out by plane on Tuesday, but, after granting one clear day, evidently felt that it had done all that could be expected of it, and made weather conditions so adverse that flying was once more out of the question.

Mr. James Ellener finally returned with Mr. Walker's party on Tuesday afternoon when the temperature rose rapidly and permitted canoe travel in a heavy rainstorm.

**From The Minutes**

MOVED by Mr. G. H. Smith, seconded by Mr. Leo C. McConkey, that the following Resolution be inscribed on the Minutes of this, the first meeting of the Board of Directors of Imperial Oil Limited, since the death of Mr. Charles Ottoman, September 1st.
The Board takes this opportunity to record the loss which the Company has sustained through the passing of Mr. Ottoman, for fourteen years president of Imperial Oil Limited. Although he had retired from active management of the Company a few months prior to his death, Mr. Ottoman maintained an office in the executive department and was frequently in consultation with the members of the Board upon important matters of policy until he was taken ill early in November. His passing is therefore felt by his former colleagues as deeply as though he had occupied the office of President until his death.

Mr. Ottoman served fifty-two years in the oil industry and during that long period his knowledge and experience of the business and his remarkable aptitude for maintaining equitable relations with the employees of the Company, raised him finally to the highest office in the service. Under Mr. Ottoman's direction, practically all of the Imperial Oil refineries were constructed and the business grew from small proportions to its present magnitude. He was successively Manager, Vice-President and President of the Company and in these various offices not a day passed but his prestige was enhanced in the eyes of his fellow Directors, the employees at large and the general public.

It is the wish of the Board that this expression of esteem and affection for him be placed on the records of the Company so that his splendid record may be perpetuated for succeeding generations to read.

A motion of the board of Imperial Oil Limited, Mr. G. Harrison Smith, was moved and seconded by Mr. R. V. LeSueur and carried unanimously that the following Resolution be recorded on the Minutes.

The Directors of Imperial Oil Limited feel that in this expression of grief and regret at the passing of Mr. Ottoman, they are rendering articulate the thoughts and emotions of every member of both organizations. While Mr. McQueen's prestige as an authority upon oil production was recognized throughout the entire petroleum industry and constituted an invaluable contribution, not only to the development of commerce but to the welfare of his native country and to the South American Republics in which his companies' operations were carried on, he will be remembered best by the greatness of his heart, the fineness of his character and the breadth of his human sympathies. His achievements will be a significant page in the history of petroleum for all time but to his comrades and fellow-workers he will always be remembered for his lovable personality.

The latest development in the automation of a modern oil refinery in order to be efficient, are built from 30 to 100 feet high. To operation worked so far from the ground an accident due to a broken tube or a flash constitutes a real danger. Therefore, to enable them to escape quickly in such an emergency, an ingenious device has been attached to these towers. It is a dual cable system, anchored at the base to a "dead man" and at the top to a safety platform where there is a seat similar to a fireman's chair used in rescue at sea. Into this seat the operator steps, releases the brake by which he also controls the velocity of his descent, and glides to the ground. He steps out of the chair and the counterweight carries it instantly back to the platform for the next man, thus all in the space of a few minutes. The above photographs show this mechanism, which is installed on all the Imperial Oil's high equipment, in actual operation at the Company's Montreal Refinery.
THE SCHOOL BUS

YEARS ago if you were a country boy or girl and lived miles away from the nearest school you either set out early in the morning with your lunch-box under your arm to tramp the intervening distance or stayed at home and relied upon the education your parents saw fit to give you. School houses in the rural districts were small, consisting usually of a single room, and their equipment was rudimentary.

Nowadays, in many parts of Canada, country school children are more fortunate. If they live very far from their school, a motor-bus calls for them, carries them there quickly and comfortably and returns them at the end of the day. The building in which they receive their instruction is often modern and completely equipped as any city board of trustees could desire.

These two advantages of transportation and up-to-date training are to a large degree interdependent, in many cases the one making possible the other. Because motor-buses are used, one school can serve several sections and a more elaborate building is possible, which serves as a social as well as an educational centre. Frequently the Consolidated School, as it is called, includes a community hall which is used by Women's Institutes and agricultural clubs as well as by the children.

Consolidated Schools have been very successful in Northern Ontario and in the West and have brought excellent educational facilities to numerous isolated districts. The buses used in the work of transportation are of various types; many of them are heated for winter use and can be converted into open air vans in the summer. Twice a day they cover routes which are often 10 to 15 miles in length. On one run in Alberta they became so popular with transients along the road that a sign forbidding passengers to be posted. That pupils who attend school by motor-bus appreciate the splendid educational opportunity which might otherwise be impossible is evidenced by their eagerness to learn. That things difficult to attain are most highly valued seems to hold true in their case, and most of them really like to go to school. Better work done and fewer failures are the result. It is on record that in six years a foreign youth who couldn't speak a word of English before attending one of these schools passed all his examinations, entered University and led his second year.

Motor-bus transportation of school children, of course, is not confined to the rural districts and is not always used because distances are great. There is the case of a school on the outskirts of an Ontario town whose pupils are live more than a mile removed from the nearest, but who must walk along a Provincial Highway carrying the heaviest traffic in the Dominion. The motor-bus employed in this instance not only minimizes the distance factor but, more important, protects the youthres using it from the grave danger which lurks along the side of the road.

Perhaps the most interesting phase of motor-bus transportation is the part it plays in bringing education to crippled children who otherwise could not attend school. In Toronto at Wellesley School there is a whole class of these unfortunate, living in all sections of the city, who would be forced to depend upon home instruction if an alert School Board did not supply motor-buses to call for them and take them home. The opportunity to mingle with other pupils their own age means much to these boys and girls.

No matter how efficient a personal tutor might be, something would be lacking in their development without the contacts and associations of school life. The itinerary of each of the two buses engaged transporting these crippled children is a varied one, extending from 10 to 15 miles and taking about an hour's driving. Practically every Toronto district is visited in order that no child whose disability is not too great shall be denied school education. Each bus accommodates about 16, and there are about 75 of these youngsters to be collected, a staggered system of classes has been arranged. Two buses arrive at nine in the morning and when the bell rings at 2 o'clock in the afternoon their school day is over; two more buses draw up before the Wellesley door at ten, and three o'clock is their closing hour; a single busload which arrives at 11 o'clock continues on until four o'clock. Each of the bus seats has a safety rail like that which fastens joy riders on the "Flyer" safely into their harnessed car.

The smiling faces of these children as they climb or are carried out of the bus upon its arrival at the school bear witness to their appreciation of the opportunity given them to receive an education in the manner that other boys and girls do. Part which the motor-bus plays in making school training possible for such as these is truly one of its greatest accomplishments.

Page Thirty-Five
The new home of Edmonton Marketing Division.

NEW DIVISIONAL OFFICE AT EDMONTON

THE spacious new building at the corner of Victoria Avenue and 102nd Street, which houses the offices of Imperial Oil's marketing division at Edmonton, was officially opened on December 4th. The ceremonies began with a programme of speeches interspersed with musical numbers. After a buffet luncheon the main office was cleared for dancing, which lasted until the early morning hours.

Mr. F. T. Norris, Manager, was chairman and spoke (in part) as follows:

"On behalf of the Imperial Oil Limited, I have very much pleasure in welcoming you to what you might call our 'house-warming' or our 'birthday party' as it is twenty-one years since we first opened offices in Edmonton. It is a matter of great satisfaction to our Company to be able to have such a function, for as you know, 'house-warming' parties are a rare thing these days, in fact after a certain age I am given to understand that birthday parties are also rare.

"It will interest you to know that behind this formal opening of our new headquarters in Edmonton lies a definite policy of Imperial Oil, Limited. Ever since the depression, our Company has sought to do its share in alleviating the distress that has followed unemployment, and in securing and converting this building into up-to-date office quarters was done at this time with the thought of in some small degree creating work for those in the building trade, as this line of commercial activity is one of the first affected by a depression.

"I would like our friends to know that Imperial Oil, Limited, have been pioneers in the five-day-week plan and that in Edmonton, as elsewhere, we have followed the policy that it is better to shorten the working week than to dispense with employees, with the result that the number of employees has been kept at the same level as during what you could now term the boom days of 1928 and 1929.

"Our moving into this building—our permanent Edmonton home—also demonstrates the faith and confidence that our Company have in this district. Personally, although a newcomer to the territory, I have been over a great portion of it and can see a future for Northern Alberta. Our great natural resources have at this time hardly been touched.

"I cannot let this occasion pass without stating that this function would have afforded great pleasure and pride to one gentleman well known to all of you, and one who in the past fourteen years has played an important part in the affairs of the community. I refer to my predecessor, Frank Turley, who I know is certainly with us this evening at least in spirit.

"These few remarks, ladies and gentlemen, may give you a little idea of the official interest of the Imperial Oil, Limited in this community. Later on a little ceremony will be performed which will show you in a tangible way something of the interest of the employees in the welfare of Edmonton."

Mr. Norris read the following telegram from Mr. Turley:

Sincerely regret unable to attend reception. Many thanks for invitation and appreciation your thoughtfulness. Please be assured I will be thinking of you all Monday night. Hope a good time is had by each and every one of staff. Best wishes to all.

Hon. R. G. Reid, Minister of Municipal Affairs extended to the Company the greetings of Alberta's Premier, Hon. J. E. Brownlee, who was in Victoria at the time. Mr. Reid commented on the cooperation given by Imperial Oil to the Alberta government. Mayor D. K. Knott offered the city's felicitations, and paid tribute to the work of Frank Turley, who for so many years had managed the Company's interests at Edmonton. Other speakers were R. V. MacInish, president of the Edmonton Chamber of Commerce, J. E. Akitt and D. J. Avison, assistant managers of the Company.

Following the speeches, Mr. Avison presented to Dr. Washburn, of the Crippled Children's section of the University Hospital, a motion picture projector and screen, for which Dr. Washburn returned thanks on behalf of the hospital.

A register was signed by the guests and contained over 1,000 names, including those of government and city officials and many representatives of Edmonton's business interests. The party ended amid the good wishes of all for the continued success of Edmonton Division.

DR. SINCLAIR RETIRES

P. F. SINCLAIR, head of Imperial Oil Annuities and Benefits Department, retired on December 31st, 1931. Dr. Sinclair becomes an annuitant under the provisions of the Company's Annuities Plan which he administered successfully during the 14 years that he was in the employ of the Company.

Dr. Sinclair took his B.A. at Varsity in '95 and his M.A. in '97, and was graduated in theology from Princeton Seminary in 1898. He served at the Lindsay Presbyterian at St. Andrews in Winnipeg, and at North Broadway, Toronto.

Early in 1920 he joined the Imperial organization, succeeding the late Rev. Dr. Strachan as Chairman of the Company's Annuities and Benefits Committee. He was also trustee of the Company's Co-operative Investment Trust and a director of the Pension Fund Society. His services brought him into intimate relations with the Company's thousands of employees in all parts of Canada.
HERE AND THERE

EDMONTON

SINCE Edmonton was first made
a Divisional Office of Imperial Oil
Limited, it has been one of the
unforgettable on account of the
good times held.

When the staff said good-bye to
the offices which they had occupied
for a period of almost ten years
and moved into the spacious and
comfortable new offices, the event
was marked by a brilliant reception
and entertainment.

Christmas being near at hand, it
was felt that the younger genera-
tion of the Imperial Oil family
should be given an opportunity
enjoying the new home and con-
tributing to its social history, and
a Christmas Tree Party was planned.

Invitations from Santa Claus
were sent to the children to meet
him in the Imperial Oil home at
5:30 on the evening of December
22nd, and well before that time
the little ones and their parents began
to assemble. About one hundred
children and two hundred adults
gathered in the cheerfully deco-
 rated hall.

Our general manager, Mr. Norris,
and his wife, were on hand, presen-
ting the children's night, wel-
coming our small guests, and said
that in his opinion this was the most
fitting way to celebrate Christmas.
Agreed that afternoon and the close
of another year. He reminded
participants that the children got
one little ones and requested that it
was a family party, he hoped that
everyone would make it a success. He
then turned the party over to D. J. Scotty
who, as master of ceremonies, left
nothing to be desired.

Song selections passed around
and with Larry Tyrell at the piano
special attention was being given
to the children, to the children,
and showing an amusing and artistic
the entertaining.

Lunch was served in the base-
mament, where all had a round
cambered on the main floor
and to the delight of all a comic
cleaning performed in Santa
Claus, who after greeting every-
one, was bestowed by the little ones
to each of whom he presented a
gift. Needless to say, although one
year older, he had lost none of his
popularity, which fact was amply
demonstrated by the hugs, kisses
and expressions of appreciation
showered on him when the Master
of Ceremonies announced that as
Santa Claus had a number of other
calls to make, it was necessary for
him to leave.

Most of the little ones departed
with their parents about 8:30 full
of the excitement of Christmas
and Santa Claus, happy in belonging
to the great Imperial Oil family
and looking forward to future entertain-
ments of a similar nature.

For the rest of the evening
our new home was filled with the music
of Wally Dalglish's "Imperials,

I was then that the 56 Church
Street Club threw off the sackcloth
and ashes which it had been
wearing for the past four years
and rang in the new year with
success and a winning dance
at the Silver Slipper on the banks
of the Hamlet.

Avery approximately 400
celebrated the return to normality
and the occasion was so successful
that the committee threatens to
repeat the experiment in the near
future.

Let Calberton, Simms, Lenz
and the army of so-called contract
bridge experts look to their laurels,
for the 56 Church Street Club has
taken up "contract" in a big way.
Recognizing the fact that a plea
of ignorance of the finer points
of contract bridge is equal to social
ostension, the bridge section has been
fortunate in turning up a winner in
tournament in this greatest of all threats
doing from 5 to 2 with Wilbur B. Hutch,

A preliminary meeting was
 largely attended and the first serious
session has now been held with
gratifying results. Before long it
is expected that when one is invited
to partake of a game of bridge, the
Bridge in the big bridges will be
"Do you play the Church Street
System?" To the delight of the
talent, we reproduce a picture of the
trophy presented to the winner,
by G. H. Smith to replace the one
purchased by Jimmy Pope.

This will be known as the
President's Trophy, and will be the
premier award in our annual
competition. After the publication of
this copy of the REVIEW we
expect that the golf schools
will be inundated with our esteemed
members and players.

The G. H. Smith Golf Trophy

TORONTO

56 CHURCH STREET CLUB

WHEN historians and economists
sit down to write the epic of what
has been generally referred to
as "The Depression," it is possible
that they will agree that it terminated at 9
on the evening of Thursday, November
30th, 1933.

It was then that the 56 Church
Street Club threw off the sackcloth
and ashes which it had been
wearing for the past four years
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success and a winning dance
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The G. H. Smith Golf Trophy

HISTORIC FIRST FLIGHT

The first regular air mail delivery
to a point actually on the Arctic
Ocean was made on January 26, to
Caroline River one of the far-
thest north points in the Canadian
Northwest Territories by the
frozen Barrens, from Cambridge Bay
190 miles south, was made by
Pilots A. W. Campbell and

On this historic flight the 'plane
carried 600 pounds of mail and
express and 4same for the flight
"covers" sent by stamp enthusi-
asts. It was fueled with Imperial
gasoline and lubricated with Im-
perial Marcolube.

COLOMBIA

CHRISTMAS mail from Colom-
bia, South America, brings
news of the happy holidays enjoyed
by the employees of the Tropical
Oil Company. There was no snow
or ice to provide the atmos-
phered conditions for our northern
festivities, a jolly time was had by
all, and Santa Claus made his
rounds just the same. "Scores" were
popular, but instead of skiing they
were instead of sliding, they tread off
and pursued a little white ball from
green to green. The "merry" in which
the bachelors strode mightily to
outpull the married man, with
what success we do not know.
Report on Special trains brought
the Baranos to El Centro for the
dances held there as part of the
program.

Dramatics were popular, too.
Eddie Cantor provided amusement
in his one-man show, and amateur
theatricals claimed the
interest of many. On Christmas
even the children of El Centro
were delighted with a musical
playlet entitled "The Snowman," which
put them in a proper mood for the
coming of the jovial old gentleman
from the North.

One of the chief events of the
holiday season was the inauguration
of the "Eccot de El Centro," semi-
monthly organ of the Club Union
International. The first issue, number
of which appeared on December
22nd.

Page Thirty-Eight

Page Thirty-Nine
WINNIPEG

THE formation of a new Imperial Social Club at Winnipeg marks another step towards the closer welding of Imperial associations.

At Winnipeg we have thirty-five licensed service stations. Although their proprietors and employees are not on the Imperial payroll, yet evidence of their relationship was expressed in no uncertain manner when, in the month of October, they banded together and gave a Goodwill Banquet to the Winnipeg management and contact staff.

This expression of goodwill and co-operation led to the inauguration of the Imperial Social Club where Imperial employees and Service Station staffs meet on common ground.

The officers and members of the committee are as follows:

Honorary Chairman, L. H. Griffiths
Chairman, Charlie Waqng
Vice Chairman, Norm Davy
Treasurer, Ouida Greenwood
Secretary, Irene McNab

Committee

J. W. Goodman
R. D. Evans
Harry Eden
H. E. Brown
E. Mickelson

The opening affair was a dance and what drive held on November 17th, in the lovely Roseland Dance Gardens. Over two hundred Imperials and their friends were in attendance. Everybody had a good time and enthusiasts ran high as employees, service station men, their wives and friends all joined together in a melody of fun and gladness.

SARNIA

IN RECOGNITION of their splendid playing and good sportsmanship the members and officials of the Sarnia Imperials were presented with gold watch chains and tokens by L. C. McCluskey, Director in charge of Manufacturing of Imperial Oil, on behalf of the Company. The tokens were in the form of a football and suitably inscribed.

The event took place on December 22nd in the laboratory library of Sarnia Refinery.

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IMPERIAL OIL REVIEW

Obituary

JOHN McGILLIVRAY

WE REGRET to record the untimely death of John McGillivray, who for the past nine years was employed at the Company's offices at 56 Church Street. He was born at Bridge of Allan, Stirlingshire, Scotland, and came to Canada as a young bank clerk, locating with the Bank of Nova Scotia at Ottawa. He enlisted with the 39th Battalion, attaining the rank of sergeant-major, and went overseas with this unit.

After the war Mr. McGillivray returned to Ottawa, and in 1913 came to Toronto to join the Imperial organization as assistant to G. Gordon Bell, at that time Manager of the Motor Equipment Department, and now a Director of the Anglo-American Oil Company, London, England.

Through his duties in the Motor Equipment Department, Mr. McGillivray became well known throughout the Company, and among the representatives of motor equipment firms. Until recently he had been a member of the Sergeants' Mess of the Toronto Scots, where he made many friends.

"Mac," as he was generally called, was a man who went quietly and cheerfully about his work, with a kind word or a helping hand for his fellows, the undercurrent sort whose loss is felt more keenly as time goes on.

TRADE JARGON AND OIL TANKS

EACH industry has its own language. In the oil industry a "headache post" on the drilling rig is designed to prevent the walking beam from contacting with the driller's head and thus causing him a headache, if such might be the result of a blow from a five hundred pound weight. In the oil gauger's language "thief" is an oil sampler and the following extract from a gauger's letter does not relate to compounding a felony:

We have no thieves in this office but my assistant reports that there are two in the warehouse, and one of these will be sent to you. Please see that this thief is locked up at night.

When a well is producing oil, the oil is run to a flow tank, and thence by gathering lines to the lease storage tanks, which are connected to the purchasing pipe line system. When a tank of oil is to be run, the gauger for the pipeline company inserts a long metal double tube which has openings along the side. When the two tubes are turned, one within another, those openings allow oil at the various levels to fill the tube at that point and an exact sample of the oil from the top to the bottom may be had for test. The tube for this test is called a "thief."

The gauger then takes the average temperature of the sample and its gravity, and by inserting a pole marked in inches and feet he can get the depth of the oil in the tank. He then opens the gate valve into the pipe line system, and runs the tank of oil out to within a few inches of the bottom, taking another gauge of what is left when the valve is closed. Then he makes out a "run-ticket," which shows the before and after gauges, the temperature and gravity of the oil run. These tickets are in triplicate, the leasee, property owner and pipe line system each getting a copy.

Every tank in the oil fields is known by number. These tanks have been strapped, or measured, so that the contents for each inch are known. Both the pipe line and producing company have a copy of this strapping.

Part of Sarnia Refinery's No. 2 Plant. Loading tanks, cracking coils, 100-ton stills, and the gasoline absorption plant make up this study in steel.
A relic of the days when a cooper was a craftsman—the first barrel made in the old cooper shop at Sarnia Refinery. These barrels, stoutly constructed of solid oak for the safe transport of petroleum products, are being replaced by the ubiquitous steel barrel, by tank cars and motor tank trucks.