Rounding Out the Pattern

With the start of construction of the Trans Mountain pipeline to the Pacific coast this spring, the transportation pattern for Canadian crude oil is being rounded out. Trans Mountain will surround the barrier of the Rockies and permit westward extension of the areas served by prairie petroleum.

Since the Leduc discovery in 1947, the flow of Canadian oil to wider markets has developed through several stages. At first it went to the areas relatively close to the new fields. Then it spread out eastward through Saskatchewan and into Manitoba. As the prairie provinces reached self-sufficiency in oil, the Interprovincial pipe line was built connecting with the Great Lakes tankers to deliver crude to Ontario.

Trans Mountain, to be completed in 1954, is next. The new line will be 700 miles long and 24 inches in diameter and have an initial capacity of about 35,000 barrels daily.

A number of oil and other companies, including Imperial Oil, are helping to provide funds for the project which will cost about $80 million. No shareholder has more than one-twelfth of the equity.

Expansion of refinery capacity will be an accompanying development. Imperial's refinery at Ioco near Vancouver will be modernized and expanded to a capacity of 22,500 barrels a day. Other companies have announced expansion programs. British Columbia's refinery requirements will be met in full from Canadian crude. Because of the heavy demand for heating, diesel and heavy fuel oils, some of these will continue to be imported.

Trans Mountain will add to the security of supply and assist the further development of B.C. When the new line is completed, transportation routes for prairie oil will have been established, both to the west and to the east. They will be ready for steadily increasing deliveries as further discoveries bring closer Canada's goal of petroleum self-sufficiency.

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A Beautiful Canadian Window

Our front cover gives an indication of the rich, glowing colors in a section of the Te Deum window in Grace Church, Brampton, of which Canon H. F. Appleyard is rector. The window is an example of the Canadian craftsmanship in stained glass described in the story Artistry in Glass on page 14.

As shown in the picture at the left, the full window has the theme of praise to God. Christ is the central figure, surrounded by a heavenly host.

In the lower section are the figures of St. Gabriel, St. Michael and St. Raphael, three of the great archangels mentioned in the Book of Daniel. St. Michael was the holy messenger who announced the birth of John the Baptist and of the Mouth. St. Michael, chief of the heavenly host, is the guardian of the true Israel and of the church. His fight with a dragon is described in Rev,
Hockey Night Across Canada

Radio brings the big time games into Canadian homes. This is the story of the broadcasts that have become a national institution.

In Hollyburn, B.C., and in Lunenburg, N.S., in Fortaleza, Praire, Man., and in Nausau, New Hampshire, there are hockey fans who know more about the National Hockey League and its players than most of the people who live next door to Toronto's Maple Leaf Gardens or the Montreal Forum. Across Canada there are enthusiasts who have never seen an NHL game yet know the first names of obscure substitutes and where they played junior hockey last year, perhaps with the Barrie Flyers or the Quebec Citélai or the Brandon Wheat Kings.

These long-distance hockey fans can do this because more than three million of them listen to the 54 Canadian radio stations (13 on the French network) that carry Imperial Esso Hockey Broadcasts every Saturday night from the Gardens and the Forum. Many of them have been constant listeners through all of Imperial's 16 years of broadcasting hockey coast-to-coast.

Foster Hewitt, Canada's best-known play-by-play announcer, does the Toronto games over a 30-station network; Michel Normandin broadcasts Montreal games over the 13-station French hookup, and Doug Smith gives the English language broadcasts of the Canadian games at the Forum carried by two stations in Montreal and Quebec City. Because of these three voices, people in every province in Canada and in many of the U.S. border states have become avid followers of hockey. There are listeners even in such far away points as Bermuda.

The hockey broadcast has become a household word because thousands of listeners have grown up with it. Many of the 'teen-agers who wrote in for the autographs of the star players in the 1930's now are fathers with sons. In some homes, Dad and Son and Grandma listen to the games together, beside one radio.

When they think back over the years, Dad and Grandma realize there have been many changes in the teams and players and one change in sponsorship of the national program. The broadcasts started in 1935 and the first national hookup for a game was in 1935 when Detroit defeated Toronto, 5 to 1. Imperial took over the broadcast sponsorship from General Motors in 1936. In that season, the New York Americans, who seem to have been out of hockey forever, still had five years of life remaining.

In 1936, Rocket Richard was not to break into the NHL for another six seasons. Bill Cook, one of the greatest of right wingers, was not to retire from the New York Rangers for another season. The immortal Howie Morenz was in his final year with the Canadiens (he died March 8, 1937) and Turk Broda, the modern Methusalem of hockey, was a jittery rookie with the Leafs.

Many towns in Canada can be considered typical hockey broadcast listening posts. One of them is Delisle, Sask., and there is the added filip about Delisle that no place twice its size has had half so much hockey publicity.

The village of Delisle, about 35 miles southwest of Saskatoon, has a population of 450 and for nearly a dozen years sports pages and Elmer Ferguson, the sage of Imperial's Hot Stove League, have been making it famous across Canada in a backhanded sort of way. They never tell very much about it but always work in the village name when they're talking about Canada's largest hockey family, the Bentley's.
of Delisle. There are six Bentley boys and seven girls. Every one of them is a fine skater and two of the boys, Doug, formerly of the Chicago Black Hawks and Max of the Toronto Maple Leafs, are among hockey’s finest scorers, both having topped the 200-goal mark.

Delisle is not unlike hundreds of other little towns from coast to coast whose residents and radios have truly made Saturday night “Hockey Night” in Canada. The elevators of the Saskatchewan Wheat Pool loom no higher in Delisle and in the wintertime the snow is no deeper, and the cracking dry air, that makes the white smoke rise straight up from the chimney tops into the clear blue sky, is no colder.

Down Delisle’s one main street there is a one-storey brick store. It has no sign over the door and no painted inscriptions on the windows, yet everybody knows that this is Bill Bentley’s store. Here, between the long parallel counters which line the scrubbed wooden floors and bracket the pot-bellied stove near the back, Bill Bentley, the 78-year-old sire of the Bentley clan, has been in the general furnishings business since 1919.

During the day the folks drop in to talk to Bill—folks like Tom Robinson, the butcher and grocer next door; Edgar Carlsen, a Swedish farmer; Len Funk, the Delisle Imperial Oil agent; Harry Gardner, publisher of the town’s little weekly, the Advocate; and Bill Norris, now retired, who was a neighbor and close friend of Bentley when they both farmed in the Delisle district. On Mondays through the winter they gather at the back of Bill’s store around the stove to discuss the games that resemble the Hot Stove League itself. They talk about the game in Toronto on Saturday night and take it apart play by play. The events seem closer to Delisle, of course, if Max has scored two goals and if Doug has been mentioned on the air by Bobby Hewitt, Hal Cotton or Syl Apps.

On Saturday nights in Delisle—and in Portage la Prairie and Victoria and Corner Brook, Newfoundland and Winnipeg and St. Andrew’s-by-the-Sea, radios in stores and restaurants and in many of the homes will be tuned to the one program. Somehow over the years the hockey broadcasts on Saturday nights have become a way of life in Canada; in each community, fans listen as the guests of the local Imperial dealer or agent.

According to estimates by International Surveys Ltd., the listenership of the Imperial Reso broadcasts rates among that of the first six commercial programs heard in Canada and consistently tops that of all commercial programs originating in this country. Through the season, approximately 25 per cent of all radios in Canada’s English-speaking homes and 21 per cent in French-Canadian homes are tuned in to NHL hockey. At playoff time listenership in some areas rises to over 50 per cent of all home radios.

The millions of listeners get as much entertainment and as much information as the people sitting in the big eastern arenas and more expert information. It long has been maintained that there are two hockey games in Maple Leaf Gardens of a Saturday night; the one on the ice and the one in the air. Essentially, this is true. Bad game or good, Foster Hewitt’s method of describing what he sees catches the interest of his vast audience.

Everything Foster says about a hockey game is accurate but it’s what he doesn’t tell that acts on his broadcasts. He has the talent of eliminating the meaningless scrambles beneath his goalposts and he gives voice only to developments of consequence. Thus, while the spectator in the rink absorbs the razzle-dazzle, the listener hears only what is to the point and significant. If it’s a dull game the spectator is bored; but the listener is entertained by his highlights.

It is doubtful if more than a small fraction of one per cent. of the millions of listeners would know Hewitt if they talked to him. His conversational voice is not the voice Canada hears on Saturday. Infections are similar but the volume and the energy he puts into his broadcasts are missing.

Hewitt is tremendously conscious about his broadcasts. He used to lose up to 20 pounds over a season but now, at 160, he weighs more than he ever did. By playoff time, his nerves become so jumpy that he can’t eat on the day of a broadcast.

On the evening of a game, Foster’s broadcasting routine begins when he leaves his long, narrow, picture-lined office on the third floor of Maple Leaf Gardens about eight o’clock. He opens six doors and

Most of the people in Delisle, Saskatchewan, home of hockey stars Max and Doug Bentley, listen to all the games. At the radio are Bill Bentley (right) and Max. Bentley (center) parents of the players, and brother Jack and his wife.

Vancouver listeners: Elaine and Norman Campbell with J. P. Long. Campbell is radio producer, Mr. Long is retired. The Pacific area hears the games at evening dinner.

Paul, Bob, Jimmy and Doug Trosby at a tense moment in a broadcast. Most Canadian boys become ardent hockey fans and keep this interest through the rest of their lives.

Autographs of their favorite players have been signed by generation after generation of hockey-attacked youngsters. Here Sid Smith, Leafs’ forward, signs for some admirers.

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IMPERIAL OIL REVIEW

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climbs 89 concrete steps in a long, twisting trail which leads to the catwalks in the rafters.

The slender broadcasting booth, the gondola, is only 56 feet above the ice surface but seems much more than that. It is suspended slightly back from the rink boards at mid-ice and offers an unobstructed view of the playing surface.

When the Gardens was built in 1931 Foster selected the gondola location because it was far enough away to give him an over-all picture of the action and close enough to permit instant recognition of the players. He employs no spotters, knows all the players and identifies them himself. However he does use two assistants, a man who signals station breaks and a girl who keeps track of statistics on out-of-town games.

Incidentally, there is no engineer in the gondola. Tommy Kilgour, the engineer ever since the 1944-45 season stays at ice level, in a tiny room under the box seats. He must be the only man in the world who has been so close to so many Saturday night hockey games and never seen one. Instead, he sits in his little room watching the volume needle that indicates the power in Hewitt’s voice. His job is to keep the volume controlled so that during a particularly exciting bit of hockey action, listeners won’t be blown into the streets by Hewitt.

In the first period (which is not broadcast) Hewitt acquaints himself with the trend of play and the characteristics of new players. He uses no notes or diagrams, says he never refers to players’ numbers for recognition purposes; rather, learns their styles and mannerisms. He works lanllenched, but wears an old toponot which he considers lucky and which he has put on before every one of his broadcasts through all the years. He keeps a jar of mineral oil near him for occasional gargles and makes a quick pass at the jar just before he goes on the air at the start of the second period, applies it. This keeps his voice from creeping into the microphone and begins to talk.

Some hockey fans maintain that Hewitt is partial to the Maple Leafs, that he’s more enthusiastic in reporting a Toronto goal than a visiting team’s goal. Foster admits his voice reflects enthusiasm but denies this is a proof that he’s partial. “We let the game and the crowd carry us,” he explains (when Foster is talking about himself he says “we” more frequently than “I.”) “As the noise swells the voice rolls higher. If there’s a goal the noise and the excitement are at such a pitch that the voice must reflect it. Since most of our games are done in Toronto it naturally follows that there is more excitement for a Toronto goal. It’s a fact that we do the same thing in playoff games in Boston, say, or Detroit; we reach the most natural pitch in describing goals by the Bruins or the Red Wings.”

Hewitt feels that, like a referee, he must try to remain as impartial as it is possible for a human to be. If players are hurt, he says, he must be tactful; in his comments he must neither condemn the offended or nor condone the offense.

It is inevitable that Hewitt’s remarks and those of the Montreal broadcasters sometimes lead to controversy and comment. Hockey is a controversial subject and no two persons will always see eye-to-eye on every play. That’s what helps to make the Imperial Blue broadcast of continued interest.

Because of this interest, the broadcasts have been able to attract a great variety of worthwhile public appeals—those that are registered national appeals with a federal charter.

At one point in World War II, the Royal Canadian Navy was short of binoculars and the Navy League tried several methods of obtaining them, without much result. Then the League asked if the hockey broadcast could make an appeal to the public. After the news was mentioned on a single broadcast, 1,500 binoculars were forwarded in less than two weeks from citizens all over Canada. The League made a second request, that the broadcast say “Thanks Canadians, you’ve sent enough.”

Something of a record response to one of the pass-time appeals came when this broadcast asked for help for a national charity. Every man, woman and child in the town of St. Augustine, Que., contributed.

Men who served in Europe during World War II heard the hockey broadcasts, and Canadian soldiers who are serving abroad have heard this season’s games. In the early 1940’s the games were recorded in their entirety and when they ended Hewitt and...
two advertising agency men, the late C.M. (Pac) Pasmore and Hugh Horler, went to Toronto's CBC studios to create a half-hour broadcast for service men. In narrative form, events leading up to the game were pieced together with actual excerpts from the broadcast. Inconsequential action was cut from the recorded broadcast and the gaps leading up to goals or fights or other pertinent action were bridged by further narrative. The whole half-hour capsule was then beamed to the BBC for rebroadcast to the troops Sunday afternoons.

Last spring during the playoffs the same method was followed; the capsule was taped and flown to Tokyo by the U.S. Army Air Force for rebroadcast to Canadian troops in Korea.

This season the third periods of the games were tape-recorded with summaries of earlier play and commentaries for dispatch to Korea and Europe. Material for Europe was beamed from Sackville, N.B. over CBC International shortwave to be picked up by the armed forces' station and rebroadcast so that Canadian troops serving with N.A.T.O. could follow the games.

One of the best remembered stories in connection with the overseas broadcasts came in a letter from a Spitfire pilot in World War II. While he was flying on operations high across the English Channel, he related, he became so interested in listening to the hockey game that he forgot for a moment to search the skies for Messerschmitts. Then he suddenly remembered where he was and continued on his mission feeling that at least he'd heard part of the broadcast and for a few minutes had been back home.

The pilot's letter was one among the many comments about the Imperial Eano broadcasts that came in a fairly steady stream, averaging 400 letters a week through most hockey seasons. The number fluctuates with the importance of the games (it's heavier during playoff time) and with the topics chosen by the Hot Stove League. If it's a controversial point, such as an argument over a rule or whether Milt Schmidt was a better centre than Syd Apps when both were at their peak, there'll be a flood of correspondence giving the writers' views on the subject. Reminiscences by the Hot Stovers attract scores of letters from older fans who recall similar instances.

To a lesser degree—for the obvious reason that there are less people—the French network has its letterwriters, controversy-lovers and just plain fans. Quebec customers, loyal followers of Montreal's Les Canadiens, don't have to listen to the Saturday night activities in Toronto of the rival Maple Leafs. Since the 1937-38 season Imperial broadcasts have been made from vantage points close to the Montreal Forum's roof where there is a clear view of the whirling action for below. Sports commentator
Michel Normandin, French Canada's "Mr. Hockey", has been at the mike for Imperial since 1942. Doug Smythe did such a brilliant job describing the 1944 playoffs in Montreal that in the fall he was made the regular play-by-play announcer for the Bengals from the Forum.

Montreal has no go-to-girl; instead, there is a long iron ramp, stretching the length of the Forum and housing the broadcasters, the newscapers and a goodly number of spectators' seats. The press box and the radio booth stretch roughly from goal to goal, with seats for sale in the two end sections.

The French network program follows the same general format as the Toronto broadcasts, including a French and an English edition of the Hot Stove League. The French Hot Stove League, the Centre Club du Vieux Poète, has Charles Mayer, sports editor of Le Petit Journal, Jacques DesBoulles, the master of ceremonies, Pierre "Pete" Marin, former player, Camille DesRoches, Forum publicity director, Jean-Maurice Baully, CBC sports commentator and Paul-Marcel Raymond, secretary-treasurer of the Forum.

Montreal's English Hot Stove League sessions are conducted by Walter Downey, a radio producer, and have such sports writers on the panels as Elvis Ferguson, Bob O'Meara, Andy O'Brien, Paul Haynes and Kenny McKenize, NHL publicity chief.

Toronto's Hot Stoves also are sports scribbles or other experts who are closely associated with hockey. And in Detroit they have Maple Leaf sympathizers from overbalancing the panel. Hal Cottin, though a former Leaf player, now is a chief scout for the Boston Bruins. Ferguson is, of course, a long-time Canadian fan and observer. Sri Appa and Bobby Hewitt speak for Toronto but such guests as Jack Adams, general manager of the Detroit Red Wings, and Frank Boucher, general manager of the New York Rangers, are frequent visitors to League sessions. Jim Coleman, who writes a nationally-syndicated sports column not identified with any particular city, has appeared frequently, too.

Toronto's Hot Stoves don't chitter at random, though they don't actually follow a script, either. They assemble at noon on broadcast day for an informal chat. Wes McKnight, the master of ceremonies, and Hugh Horler, program producer, take notes as the Stovers exchange gossip and if one of them becomes upon an interesting topic, or a controversial one, they jot it down and see ways of exploiting it.

After an hour or so, McKnight has a pretty good idea of the trend the night's discussion will take and he draws up an outline which is mimeographed and handed to the Stovers as they arrive at the Gardens before game time. The script lists what was discussed during the midweek session and serves as a reminder of topics which McKnight will introduce.

The Hot Stoves sit in a box through the first period and make notes on the trend of the game.

Frank incident, 1949-50 season: Richard's ski-stick shattered glass protecting the rows of front seats in the Gardens.

After Foster Hewitt has made a brief resumé of play and Jack Dennett has talked about Expo products, the Hot Stovers begin their radio discussions.

The Hot Stove League has no roof. In Toronto the League broadcasts from a tiny soundproof room across the hall from the Maple Leaf dressing room under and behind the box seats. There are three microphones, two of them stand-up mikes at either end of the room and the third placed on a table in the middle. McKnight stands at one, two members of the panel sit at the table and the fourth member stands at the other mike in front of the glassed-off control room. Through the glass McKnight and the others can watch producer Hugh Horler who controls timing and performances by signals resembling those of an orchestra leader.

When the first Hot Stove session is over, Dennett makes an appeal for a worthy charity and returns the air to Foster Hewitt, high in his gondola. The Hot Stovers watch the second period and study their script outlines because between the second and third periods they discuss the topics brought up at the noon session.

The Hot Stove League was developed by the late Pus Parasone, advertising agency executive who once despised of ever finding a suitable means of keeping the listening public entertained between periods. Musical interludes by various Toronto orchestras didn't seem to fill the bill and until Elvis Ferguson and Bobby Hewitt started to talk off the cuff about hockey there always was a sharp decline in the interest of the program during intermission.

The broadcasts have been handled from strange places and under peculiar circumstances. Court Bowers, who preceded Wes McKnight as master of ceremonies, but the key to the door of the tiny broadcasting room one night and appeared wildly through the Gardens, with the moment's ticking continously by, until he found an attendant with a duplicate set.

Another time Ferguson was all set to give his three-star selection and suddenly couldn't remember the names he'd selected. He'd been called upon by Benson to name them and he stood there silently shuffling and ruffling through a stack of papers and scripts to find their names. When Ferguson finally did name three he completely bewildered listeners by telling why a certain player had been outstanding — and the player wasn't one of those he'd named!

Another time Wes McKnight thanked a Hot Stover at length for a comprehensive answer to an involved question and then blithely asked the man the same question all over again, having lost his place in his notes.

On the road, in the early days, broadcasts were made from "basket" in Boston and New York steel plate floors with openwork fronts and sides of wire mesh and steel, suspended from balconies. Another broadcast from New York was made directly in front of the air-conditioning blower and it very nearly froze the broadcasters.

One of the weirdest broadcasting spots was an organ loft in Detroit, which was jammed with friends of the organist. The friends heckled and the organ blasted as the broadcasters tried to find a square foot of space in which they wouldn't sound like raving maniacs on the air.

No doubt these past mishaps will have their counterparts, with trimmings, when television arrives. Radio had to go through a trial-and-error period to reach today's smooth productions and TV will have a similar evolution.

History: Bill Barilko, later lost in the northland, scored the goal that won the Stanley Cup for the Leafs in 1951.
IMPERIAL SPONSORS
HOCKEY TELEVISION
STARTING THIS FALL

Imperial Oil plans to sponsor television for the NHL games in Toronto when the Canadian Broadcasting Corporation introduces TV in Canada next fall. While many details remain to be settled, a general agreement has been reached for Imperial’s sponsorship and it seems certain that next season’s games in the Gardens will be seen on Toronto area screens.

Arrangements for televising the games in Montreal have not been brought to a definite stage but it is probable that that city will be next on the list, and that Ottawa and other Canadian centres will be added as the C.B.C. television facilities expand.

Playoff games will present a problem for a time and it may be that at least a year or two will go before there is a Toronto-Montreal hookup for the games. The officials state that a great deal depends upon what American facilities are available for playoffs. All the NHL centres except Toronto and Montreal already have television, but at present only the games in New York and Detroit are televised.

Conn Smythe, president of the Maple Leaf Gardens, does not go along with those who feel TV is a menace to sports attendance and he’s hearty in favor of televising Leaf games, believing that video will eventually be a great salesman for hockey.

“They used to shout that radio would kill us,” says Smythe. “But the novelty soon wore off and pretty soon radio was interesting thousands of people in hockey who’d never given the game much thought.”

“Same way with television. There’ll be thousands of people seeing hockey as played by the pros for the first time. They’ll be sold on it because it’s a great game and they won’t be satisfied to stay home but will turn out to the rinks.”

Imperial started to experiment with televising the games in the spring of 1951, working closely with the CBC. There were a series of “trial runs”—setting up cameras to find their best location, tackling the scores of technical problems that the new medium will bring. A great deal was learned about “what not to do.”

Biggest problem of hockey television is to capture the game’s speed and pattern without making it completely confusing to the viewer. The cameras must be placed so that they will do justice to the play and show hockey as it really is.

Poster Hewitt has been studying the televising of hockey for six years, since New York first started experiments in Madison Square Garden.

“The trouble so far,” he says, “is finding cameramen who know the hockey business as well as the TV business. You need a man who can anticipate plays, the same way a hockey announcer must anticipate exciting moments.”

Canada is expected to set a new standard for hockey television because hockey is the national sport. Export television crews will be developed from “natural-born” enthusiasts who have seen, heard, and perhaps played hockey through a good part of their lives.

Although Detroit’s is good, none of the rinks in the American NHL cities are physically as well suited for television as the Gardens and the Forum. In contrast with Madison Square Garden, which was built for boxing and has pillars that interfere with television cameras, the Maple Leaf Gardens was built for hockey. There are no pillars and there is excellent lighting for television. Montreal’s cat-walk will help.

Toronto’s white ice, not general through the circuit, is a television asset: on it and caught by the camera, the puck has a halo and looks bigger than it is.

After the series of experiments it was decided that the best place in the Gardens for the television cameras was in a high central location but not in a gondola. In effect, the camera will always watch the game from the same seat in line with Hewitt in the centre of the Greys, the highest tier of seats.

It is probable that three cameras will be used, one for wide-angle shots, one for closeups, and one to help with the highlights of the games. Each of the cameras is worth $25,000 and they will be moved in and out of the Gardens in a mobile CBC unit before and after each game.

Television will bring a few visible changes to the Gardens. A transmitter will be installed on the roof to link with the CBC station.

There will be changes in the intermission material. Because it isn’t practical to write and deliver commercials for television as they are done on radio, the talks about Eano products probably will be filmed. For over a year Imperial’s advertising department has been working on this as a special project.

Biggest change will be in the number of people required for production. Where radio now requires a production crew of four, television will keep 12 production people at work including three cameramen and three control men, one for each camera.

But the voice of the Gardens will remain the same. For a long time Hewitt will do simulcasts—the radio broadcasts will also be the television commentary. Toronto fans with TV sets will see and hear about the games but the rest of Canada will listen to the familiar broadcasts just as usual.

Hewitt’s method of "editing" his hockey broadcasts—the way he omits the dull and razzes so that he can concentrate on describing the pertinent and consequential—will serve him well when the simulcasts arrive. The way he describes hockey today seems to be just about the perfect way to comment on it for TV.

"The big thing is not to talk too much," he feels.

"Hockey is too fast for a commentator to try to describe every development."

Any way you look at it, it seems that Saturday night will continue to be hockey night in the Gardens and the Forum. And the way Smythe and Imperial feel about it. Saturday night hockey will always be a part of life from coast to coast both for the listening and/or video audience.

George Lovatt, CBC technician, experimenting with a TV camera in a lighting booth above the ice in the Gardens. Cameras have been tried at many locations in the building to be ready for the start of television.
Artistry in Glass

Canadian craftsmen design and manufacture beautiful stained glass windows for churches and other buildings across the country.

Stained glass windows have inspired reverence and satisfied the human love of beauty for over 1,500 years. A colored glass window was installed in the Basilica of St. Paul in Rome early in the fourth century and ever since stained glass has been an accepted part of religious architecture.

Modern stained glass windows—while distinguishable from those made 50 years ago because of their lack of ornate scroll work and fancy detail—follow centuries-old traditions in their coloring. St. Paul is dressed in purple and gold robes, St. John in red and green, the Virgin Mary in blue and white, St. Peter in blue and gold and Christ in red and white.

These color customs are inexcusable yet every stained glass window is designed individually. The number of figures, their poses and even the angle of the heads are decided by the purchaser working with the window designer. The Good Shepherd is the most popular subject for a stained glass window but nowhere are there two Good Shepherds exactly alike.

Canada has several stained glass window studios located in Montreal, Toronto, Ottawa and Saint John, N.B. Eighty-one year old George A. Pringle of Toronto’s Pringle & London firm is still active in the craft in which he began to work in 1890. One of his first jobs was to help install windows in Massey Hall. Another Toronto firm, Robert McCauland Ltd., is nearly a century old and one of the largest manufacturers of stained glass windows in this hemisphere. McCauland windows have been shipped to such different corners of the world as Akhviv and Trinidad, Texas and Luxemburg, Peace River and Costa Rica.

All the Canadian companies are working on a backlog of orders for memorials for the country’s war dead. War leaves in its wake thousands of bereaved who are anxious to provide some tangible reminder of the men who gave their lives in defense of their country. Most of the graves and austere crosses of World Wars I and II are far across an ocean, but stained glass windows in Canada can serve as memorials close to home.

A small window can be purchased for about $150; a medallion window suitable for small country churches costs between $200 and $300. Costs of most windows vary between $20 and $50 a square foot but exceptional examples, such as the tall 40-foot window in the chancel of St. Paul’s Anglican Church in Toronto, are much more expensive. The cost of duplicating the 15 windows in Toronto’s Metropolitan United Church has been estimated at $100,000. Stained glass costs, like everything else, have nearly doubled in the past 10 years.

The window companies prefer to devote their art to figures dressed in clothes from Biblical days although there have been a few requests for khaki-clad soldiers in some heroic pose. The difficulty with this, according to designer John Ramsden, is that styles in uniforms change from war to war. Memorial windows to men fallen in World War I already look strange because of the changes in the uniforms.

“But Biblical dress”, Mr. Ramsden adds, “is for all eternity.”

And to some extent the stained glass window, too, is eternal. Barring fire or a bomb, the window will outlast the wall in which it is set. The only upkeep necessary is to renew the leading between the panes about every 75 years. Recently officials of an

To make stained glass windows, the artist first prepares a small-scale design in full color. Using this as a guide, John Ramsden, artist-designer, is drawing the detailed "cartoon" the exact size of the completed window.

Stained glass craftsmen Ed Swain, Sam Duna and Lyman Duls can adhere pieces for cutting. Attention is paid both to the color and the thickness of the glass panes.
Ed Low uses a fine brush and a reddish-brown pigment to draw an old glass window and other details in the "cartoon." Kerosene helps to make the pigments flow

One of the kilns used constantly by Robert McCoulind Ltd., manufacturers of stained glass windows. The glasses are being placed in a tray of plaster of Paris for firing.

After first baking, the pieces are put together and pigment is carefully brushed away, creating highlights and shadows. Then the glass returns to the kiln for firing.

Howard Plemes is completing the window by joining the pieces of glass with strips of lead. He raised recently after more than thirty years as a colorist and lead-glazier.

Churches are the most extensive users of stained glass windows, as might be expected. The Victorian fashion for colored glass in all kinds of buildings went into a long eclipse but there are some signs of a revival recently and stained glass windows have been ordered for modern banks and even for some private homes.

One doctor's home had stained glass in every window, figures about 10 inches high. In the music room was a small lyre, in the library a medieval figure reading a weighty volume, in the dining room some women feeding pigeons, and other appropriate designs in other rooms. There is a small demand in modern homes for heraldic work, family coats or the insignia of some branch of the services.

Whatever the design, Canadian windows are dis-tinguishable from European windows by the brilliance of their colors. English windows, for example, have quiet colors which suit the gentle, infrequent sunlight of the country. Strong, hearty Canadian sunlight can bring out deep, vivid colors in stained glass.

The present trend in window design is to keep the background simple and use many more pieces of glass than are used in older windows. The smaller the area of the glass, the lesser likelihood thereby of breakage. This has resulted in an infinitely more difficult manufacturing process—a blue rule, in this example, may contain 30 to 40 pieces of blue glass.

THE STEPS IN PRODUCTION

As the first step in creating a stained glass window, an artist prepares a small-scale design in full color. The design includes every detail that will appear in the completed window and is shown to the purchaser for his acceptance. From his approved sketch, the artist completes a "cartoon" which is a drawing of the full size of the window containing all details, but no color. This master drawing guides the glass artists in working with the hundreds or even thousands of pieces of glass that may be involved.

An additional drawing—called the "cutline"—is needed for the artist to put upon a thin sheet of paper over the cartoon, a tracing is made which does not show the detail of shadows and lines but does show all outlines for lead, lead bars and stonemasons. At this point, by using carbon paper, the "cutline" is transferred to a heavy brown paper pattern. The pattern is then cut up and each small piece of paper is the shape of a piece of glass.

Three-bladed scissors are used in cutting out the pattern. The extra blade clips off a slice of paper about one-eighth of an inch wide. This space will be filled by lead when the window is pieced together. These scissors are the only new and modern thing in the whole art of making stained glass windows—and they are 50 years old.

A glass-cutter's job demands both artistry and manual skill. Each piece of glass is selected with care and attention both in the color and thickness. The pane of glass used is the one that exactly matches the color in the design and best meets the light and shade requirements shown in the cartoon. The aim is to let the glass do the work; the painter only adds details that glass cannot convey.

Hand-blown antique glass, made in England, France or Germany, is used in most windows. It is crude glass containing small air bubbles and its pro- cess of manufacture has not changed in a thousand years. A pane of glass will vary in thickness and will contain several shades of one color. Thickness may vary from one-eighth to one-half inch.

After the windows are finished, the artists take over to add the lines and shading that will define the picture. The lines are not in color but they provide the features in the scenes, the outlines and details of the buildings, trees or other elements in the composition.

The lines are drawn with an oxide of iron pigment which is ground up to a very fine powder until it looks like cocoa and then mixed with kerosene and Venetian turpentine. The kerosene, petroleum's oldest product, and the turpentine give flow to the pigment when the lines are being drawn.

When an artist has completed the lines on a piece of glass, he is laid out on a tray of plaster of Paris and the tray is placed in a kiln where the glass is heated gradually and evenly to 1,300°—almost melting point.

Most of the kilns are fired by gas or electricity but some experiments have been made with oil-heated kilns and some gas is in use in some places, though not in Canada. One Toronto man is planning a mobile kiln to be fired by a propane cylinder so that it can travel with him on repair work.

As the pieces of glass come from the kiln, they are mounted by means of wax on a sheet of glass. The painters then apply to the entire area a mixture of pigment similar to that used for line detail. The sheet is then lifted up to a strong natural light and the pig- ment is carefully brushed away creating highlights and varying degrees of shadow and tone. The pieces of glass are then separated and re-baked, thus hardening the pigment into the glass.

Certain pieces may need further pigment to adjust the tone. Each time pigment is added, they are re-baked in the kiln. This process is repeated until each piece is perfect.

APPROACHING COMPLETION

The next step is the kilning, put in on in soft double-chamelled strips which are easy to bend. The lead-glaziers solders each joint on both the inner and outer surfaces of the window.

Now the artist can stand the window up to see it in its final form. Once again it is checked for flaws. Perhaps merely an adjustment of tone is needed in some piece but this can mean that a large piece of glass has to go through each stage of painting and firing.

After final approval, putty cement is brushed into all the joints on both sides. The window becomes weatherproof and is ready for shipment and installation.

The famous English church windows which surround everything but a direct hit during the World War II blitz. They prove the claim that stained glass windows are so permanent in its place for any work of art to be. Even those dating back to the 13th century yet retain their beauty. Time and weather seem to enrich the tints of color.

It is fitting that stained glass windows should be enduring. The respect and emotion they command is also enduring.

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IMPERIAL OIL REVIEW

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Executive Changes

Dr. O. B. Hopkins Retires

Dr. Oliver B. Hopkins has relinquished his office as vice-president of Imperial Oil on retirement under the Company’s annuity plan. He joined Imperial in 1919 at the beginning of the exploration program in Alberta and the Northwest Territories and was in charge of a geological party operating from the Athabaska to the Peace River.

After experience in South America, he was appointed chief geologist of both Imperial and International Petroleum Co. Ltd. in 1922. From 1933 to 1945 he was a director of International. He was appointed Vice-president of Imperial in 1944 and was elected a director of the Company the following year.

Dr. Hopkins became first president of Interprovincial Pipe Line Co. when it was formed in 1949. He resigned from that position and from his Imperial directorship last year when he was on loan to the Canadian government as head of the petroleum division of the Department of Defence Production.

M. L. Haider To Work With Standard Oil (N.J.)

M. L. Haider, Imperial Oil director since 1948 and a vice-president of the Company since 1950, has been appointed deputy co-ordinator of the worldwide oil producing activities for Standard Oil Co. (New Jersey) with headquarters in New York.

Following graduation from Stanford University in 1927, Mr. Haider became a research engineer in the field of natural gas. He became associated with an affiliate of Jersey Standard in 1929. After varied experience in engineering, exploration and production, he was appointed head of the production research and engineering department of the Standard Oil Development Co. in 1938. In 1945 he transferred to the Standard Oil Co. (N.J.) producing department.

Mr. Haider came to Imperial in 1946 as head of the Company’s producing department.

W. O. Twain Elected a Vice-President

W. O. Twain, a director of Imperial Oil and general manager of its producing department, has now assumed further duties as a vice-president of the Company. Born in Galt and educated in Sarnia and Toronto, Mr. Twain graduated in 1933 from the University of Toronto in commerce and finance. He joined Imperial the same year and worked in various refinery departments. In 1959 he became assistant budget controller and later controller. He was transferred to Toronto in 1945 as assistant economic co-ordinator and subsequently became assistant manager, supply department. In 1947 he was appointed manager of the coordination and economies department. In 1949 he moved to Calgary as management assistant in the producing department, western division. He became a director of the Company and general manager of the producing department in 1956.

Rainbow Room at Winnipeg

Colors have been introduced to speed on-the-spot observations of the control panel in Imperial’s new refinery. The code system aids efficiency.

by James M. Redditt

HOLLYWOOD would probably start to tell the story of the big control panel at Imperial’s new Winnipeg refinery by saying “It’s Amazing! It’s Terrific! It’s Colographic!” And, come to think of it, it is.

All modern refineries have control panels but the Winnipeg panel has a rainbow complex and is one of the first of its kind in Canada.

To a layman, the control room in any refinery is amazing enough. At first glance, the control panel seems to be a confused maze of dials and strange instruments beyond understanding. But to the man who works there, the arrangement isn’t complicated and, actually, the room is the centre that permits efficient operation of the refinery.

A refinery control room acts like a mechanical policeman. It lays down the law to the liquids and gases flowing through the big towers, stills and miles of pipe on the property outside. It directs oil traffic and enforces the rules governing temperatures, pressures and other factors during the processing operations. It works a seven-day, 168-hour week as crude moves along through the equipment that turns it into gasolines, heating oils and other products.

Color in the control room is an added aid to efficiency at Winnipeg. Called ColorTraffic, the panel was designed by the Minneapolis-Honeywell Regulator Co.

Besides the scores of dials, buttons and lights found on the ordinary panel, the Winnipeg panel has colored diagrams which represent the refining processes. These diagrams trace the direction of liquid and gas flow in the process units and locate the
The control panel," says Lawrence, "indicates, records and controls temperatures, pressures, liquid levels and flows of liquids and gases. It serves as a code system, making it easier to tell what's going on.

Besides permitting at-a-glance observation of the refinery's operations, the color diagrams are easy steps. The ColorGraphic panel is an improvement on older types on which instruments were grouped according to the work they did rather than in processing sequence. For instance, in a conventional panel all the temperature instruments are apt to be in one bank.

Because it is easier to locate instruments on the ColorGraphic panel, greater efficiency of operation and better control of product quality are possible. Training time of operators has also been cut considerably. The introduction of the color made only a slight difference in the cost of installing the panel.

VISIT TO THE CONTROL ROOM

"Wow! What a time Buck Rogers could have in here!" That was this reporter's first reaction on entering the control room at Winnipeg.

The large room, whose windows have a sweeping view of much of the process area, is spotlessly clean and attractively decorated. It has a soft-lit brown floor, deeper brown trim to walnut height and shining turquoise and grey panel-sections on three walls.

Despite its meagre furnishings—a desk and a swivel chair, and two movable slant-top tables—the room has a certain coziness because of the bright recessed lighting. This is especially true when there's a 40-below-zero weather outside. The room is ventilated by one of those new-fangled ceiling devices that look like a cross between a canister set and one of the aforementioned Mr. Rogers' atom ray guns.

But oh, that instrument panel! Instrument dials by the dozen, buttons, flashing lights and even a vulgar-sounding horn that can give out with a roaring Bronx cheer.

You ask yourself, "Is there someone who really understands what this is all about?" And then you find, there, at your elbow, just such a man. He is the shift operator who, with his staff of two assistants and three helpers, does an eight-hour stint in the room.

Each day there are three regular shifts working in rotation. In addition to the regular operators, two "swing-shift" operators stand duty to keep the units going seven days a week and still maintain a five-day work week. The regular and swing-shift operators are: Jack Findlay, Perry Mackenseth, Murray McLeod, Lawrence Rowland, Clifford Rutledge and Edwin Shubelotham.

When we visited the room, Operator Lawrence Rowland, who joined Regina refinery staff as a fireman 15 years ago, was on duty. He has his own explanation of how the ColorGraphic panel works.

'The gasoline from the bubble towers go to a treating plant where impurities are removed. At the same time the gases from the other processes are retrieved by the recovery unit. Some of these are rerouted back to various parts of the refinery to be used in the operation of equipment. Others, such as butane, are used in the blending of gasolines.

The control panel at Winnipeg has been designed to help operators keep track of all these refinery processes. It is divided into four sections. The first contains the instruments and diagram related to the desalter and the atmospheric distillation unit.

On the next wall, there are two sections divided by a doorway. One section is for the vacuum distillation unit and the treating unit and the other section bears the instruments and flow diagram for the cat cracker. The section on the third wall is for the instruments of the light ends recovery unit and its color diagram.

Each instrument on the panel is connected by air line or electricity to a corresponding instrument out in the refinery where the particular operation is conducted.

The color diagrams are at the top of each section of the panel. On them are raised, anodized (colored) aluminum strips, representing the various liquid and..."
gas pipes in the units. These lines are connected to raised silhouettes of the several furnaces, tanks and towers. In some of these silhouettes there are glass rectangles behind which red plastic strips move up or down. This indicates the levels of the liquids in the corresponding refinery vessels. These, like all control panel instruments, are actuated by compressed air. There are also a few other instruments set into the diagrams.

At numerous points on the diagrams there are colored symbols. One may be a blue circle, another a yellow triangle, still another a red square and another a green rectangle. And each symbol is keyed to a particular instrument on the part of the panel immediately below the chart. A circle indicates flow, which is simply the rate at which a liquid or gas is passing through a particular channel. A triangle indicates temperature; a square, pressure; and a rectangle, liquid level.

As an example of how the color symbols are used: Suppose that an operator needs to know the rate of oil flow at a particular point in the refinery operation, such as at one stage in the atmospheric distillation process. He consults the color diagram. On the panel section concerned (in this case the atmospheric distillation section) he locates a colored circle. He drops his glance to the instrument on the panel section which bears a similar colored circle. From the instrument he takes an accurate reading which supplies the necessary information.

There are 160 instruments on the complete control panel. Three of these are master temperature indicators. These bristle with small switch levers which enable the operator to determine at a glance the temperature at any of 129 points in the process.

For example, when a certain temperature needs to be maintained in one of the refinery furnaces, a control instrument on the panel is adjusted to a set point. A continuous signal, in this case a minute electrical current, comes in from the furnace to the panel. Should the temperature in the furnace fall for any reason, the electrical impulses in the signal change. This affects the automatic control instrument on the panel which sends an air impulse through a small copper pipe to open the fuel valve on the furnace. Back at the instrument panel those little inked pens doodle away, showing the correction being made.

Operator Rowland points out that any mechanical equipment, no matter how ingenious is likely at one time or another to develop flaws.

"There are times, for example, when the slightest bit of moisture may freeze in one of the copper air lines. This will cause an incorrect reading on one of the instruments, or a lack of control at some point in the refinery. This is where the operators have to act quickly so there is no production loss or danger in the refinery. They make the correction that a machine, by itself, cannot make.

At the back of the panel And, speaking of copper air lines, because of them the back of the panel sections looks like a pigmy plumber's nightmare. Practically every instrument on the panel is actuated by air pressure and many of them both receive and transmit air pressure signals. Most instruments have at least two air lines apiece running to them and this creates a great maze of lines at the back of the panel. A passageway runs behind the panel on three sides of the control room. In addition to the pattern of air pressure lines, a profusion of pipe and wires strings along the passage. Orderly confusion, that is. Everything is as neat and precise as Adolphe Menjou's mustache.

At this point, the visitor is apt to be a bit bewildered with wonder at this ingenious mass of metal and glass. As a last item of information he learns the panel plays a role not only in the production of oil products but also in the control of their quality. As finished products emerge from the refinery "production line," samples are taken at regular intervals and these are delivered to the refinery laboratory. Tests are made and within two hours the operators have a report on the quality of the products leaving the units and can make any necessary adjustments. In this way control of quality is assured. And so, returning once more to Hollywood story style, we take our leave of the beautiful Colorfuge control panel at Winnipeg, where Lawrence Rowland and his staff are preparing to go home after a steady night's work, coupled with the answering of some 13,000 questions put to them by a not-too-bright questioner.
Plowing Champs Abroad

Winners of the International match visit Europe, compete in Britain

A plane touched down at Toronto's Malton Airport on Sunday, February 17, and brought to an end a six-week European tour for the youngest Canadian championship plowing team ever to leave Canada.

Eugene Timbers, 18, of Milliken, Ont., and Norman Tyndall, 24, of Richmond Hill, just north of Toronto, made the trip as the winners of the Eno Champions' Trans-Atlantic Clash at the International Plowing Match, held at Woodstock, Ont. They more than upheld the honor of Canadian plowing abroad. Each of them returned with a silver cup for his efforts in overseas matches.

Late in January, Timbers, Canada's champion hand plowman, placed first in the 21 years and under class at the West of England Plowing Match, at Neelyn, Cornwall. In February, Tyndall, the Dominion's champion tractor plowman, was first in the Overseas Class at the Northern Ireland International Match held at Armagh. Tyndall competed against crack plowmen from Holland, Switzerland and Norway.

Timbers, Tyndall and their team-manager, John A. Carroll, assistant deputy minister of agriculture for Ontario, were the sixth such team to visit Europe as winners of the International grand prize—a six-week tour sponsored by Imperial Oil. This year the team visited West Germany, Denmark, Sweden and the United Kingdom, observing agricultural methods in those countries and comparing them with those in operation on Canadian farms.

In London they saw the funeral procession of the late King George VI. Officials of Ontario Farms in London obtained reserved seats for the Canadian plowmen in a private hotel near Paddington Station, where the procession ended.

Mr. Carroll attended an international plowing conference at Workington in the north of England. As the official representative of the Ontario Plowmen's Association, he became a charter member of the international organization and Canada's member on a committee to draft rules and standards for international plowing.

During their continental tour the Canadian plowmen and their manager visited many agricultural centers and small holdings. Some of the farms they saw were hundreds of years old. This 15th century stone tithe barn is in Cornwall.
And Now... a Products Pipe Line

Imperial Oil products from Sarnia refinery will flow underground to London, Hamilton and Toronto. The new line will permit year-round deliveries uninterrupted by weather changes.

Most of the time, life in the small village of Wyoming, in Ontario's Lambton County, drifts placidly along and the main street and railway station are the chief centres of activity. But, like most small places, Wyoming (population about 650) has a distinct personality of its own and events of which it is proud.

Wyoming can boast of an all-woman team of sharpshooters that walked off with a Dominion title. And its history includes four hectic years, from 1862 to 1866, when it was the railhead for shipments from Canada's earliest oil fields nearby.

On the brisk fall morning of last October 13th, Wyoming added to its records another event connected with oil. That day big bulldozers and ditching machines moved into the village to start construction of the first major oil products line in Canada.

The new pipe line will eventually swing its way underground across the southwestern Ontario peninsula, linking Sarnia with London and Hamilton; then on to Toronto—a total distance of some 200 miles of pipe. The project is expected to be completed by early fall of 1952 and, since October, the section from Sarnia to London has been laid and in operation.

Unlike western Canada's well-known Interprovincial pipe line which is entirely devoted to the transportation of one thing—crude oil—the Ontario line will carry a number of things, products that have been manufactured from crude. Through it will flow Esso and Esso Extra gasolines, diesel oil, stove oil and furnace fuels—at least five different products.

The line is expected to cost about $10 million and will have an initial capacity of 39,000 bbls a day. It will provide easier and surer delivery of oil products required for the automobiles, trucks, homes and factories of the heavily populated and highly industrialized areas of southern Ontario.

Expanded transportation facilities are needed because of the steadily growing demand for Imperial Oil products. The Company had the alternative of building new ships and extensive tankage to hold products in the months when navigation on the Great Lakes is closed, or of constructing a products pipe line.

Start of the line: the refinery at Sarnia looms up in this air view. A tanker is unloading Alberta crude at the dock.

This map shows the full route of the line which crosses southwest Ontario to reach London, Hamilton, Toronto, and Sarnia.

The products pipe line was chosen for two reasons. Securely bedded down three feet below the surface of the ground, it will not be affected by winter weather and its operations can be flexible, continuing through the year, day-in and day-out, summer and winter, varying only with the area's demand. In addition, the line will require less steel than a ships- and tankage program; and these days steel is urgently needed for the defense programs.

When in October all plans and surveys were complete, the pipe lines began unloading pipe along No. 21 Highway which, incidentally, was built over the original plank road constructed in 1862 to connect Wyoming with the wells of Oil Springs.

The line was built east and west from Wyoming; east to London and west to Sarnia. Although it is the same diameter, the pipe being laid eastward from Wyoming is of different weight than that used from Sarnia to Wyoming and was the first delivered. Most of it is being made in Great Britain and shipped via Montreal.

The finished section of the line begins just northwest of the old oil capitals of Ontario—Petrolia,
Oil City and Oil Springs. It continues eastward through Lambton county, into the mixed farming land of Middlesex county, until it reaches a terminal station, four miles northeast of London.

Whenever the line is to approach urban areas, it is routed outside the built-up districts to avoid running through sections where sewers, water and gas mains would present difficult engineering problems and almost prohibitive costs. Leaving the London terminal, it passes under the south end of the City of London airport—an RCAF area headquarters—lying clear of the runways.

As construction continues, the line will traverse the quiet of Oxford county dairy farms. It reaches its highest point northwest of Woodstock where it crosses a hill 1,972 feet above sea level. From there it continues on through Oxford and Westmorland counties to Waterdown, north of Hamilton. At Waterdown it will be buried on the side of Hamilton mountain, part of the Niagara escarpment. Waterdown may become the administrative and control headquarters for the line.

Hamilton will be served by two six-inch spur lines heading south seven miles from Waterdown to Lake Ontario. Approaching Hamilton from the north the spurs will take a 60-foot dive into the inner harbor and travel for a mile under water. Away from the harbor's main shipping traffic, the pipe lines will be buried six feet below the harbor bed, safe even from the remote chance of damage from a ship's anchor. Surcharging, they will reach a distribution point on the southwest side of the harbor.

Meanwhile, back at Waterdown, the main line will continue toward Toronto, running gradually downhill on a northeasterly course through Halton and Peel counties, roughly paralleling the old Dundas highway and the Queen Elizabeth super-highway.

Near the town of Weston, the line will take a sharp swing north to skirt the Toronto suburbs. It will travel east again across the northern fringe of the municipality of North York township to go under the Yonge Street highway and reach the pleasant Don Valley. The Valley will provide a channel to the south on the last lap of the long journey which will end at the waterfront of Toronto harbor.

Being built for Imperial by Comstock Midwestern Ltd., of Leamside, the main line will be of 10 and 12-inch diameter pipe. The 132-mile stretch from Sarnia to Waterdown (via London) is being constructed of the 12-inch size. The remaining 56 miles to Toronto—partly because of the downhill grade and partly because the load will not be as heavy after take-offs at London and Hamilton—is to be of 10-inch pipe. The Hamilton spur lines will require almost 14 miles of six-inch pipe.

Slipper of Imperial's new venture in product transportation is a man who has spent the greatest portion of his life moving oil from producer to consumer as fast as possible. For 17 years the large frame and easy smile of Capt. Joseph T. Stuart graced the bridges of Imperial's ocean-going tankers. In 1946 he moved to his first shore position as the marine department's co-ordinator of employee relations. Three years later he was promoted to the pipe line advisory group, and in September, 1951, was appointed manager of the Sarnia products pipe line division of the pipe line department.

Canadian-born C. J. Bullick returned to Imperial from Tropical Oil Co. at Colombia in December, 1950, to become Capt. Stuart's line superintendent. Also from South America came another Canadian, J. D. Rice, of International Petroleum at Peru. Mr. Rice will be the line's chief dispatcher. Chief engineer is J. F. Baxter of the Sarnia engineering department, and Leon McKinnon, of the Ontario marketing division is the line's chief accountant.

Although Capt. Stuart's new command will be only one-fourth the size of the 1,159-mile Interprovincial, this is a "pig" or "go-devil" which is sent through the pipe line if the inside of the pipe needs to be scraped.

Negotiations for permits, licences and easements were conducted with many kinds of property owners ranging from farmers to the federal government, taking in almost every level of government authority on the way. Fifteen telephone companies, in addition to the Bell Telephone Company, were contacted for permission to cross rights-of-way held by them. Agreements had to be reached with each municipal—county and township, village, town and city—through which the line will run. Counties and townships had to grant permission for the line to run under their roads. Road crossing fees were paid them.

Municipal planning boards and conservation authorities were consulted in each area concerned.

Provincial authority was required to bore the line under provincial highways and to sink it beneath rivers under provincial jurisdiction. Federal authority was required to make other river crossings.

In a few isolated instances negotiations did not follow the expected pattern. One farmer was quite eager to have the line run through his property. The cause of his cageranias soon became apparent. Part of his prize was his own personal one-inch line to be hooked into the products line to provide a direct and free, supply route to his home. The pipe line was rerouted around, instead of through, his land.

In most cases the Company paid cash for a 50-foot right-of-way through property for construction and maintenance of the line. Title still rests with the owner, and after construction, farmers will have full use of the land except that they may not drill or excavate near the pipe nor may they build permanent structures on the right-of-way. The Company compenates the farmer for inconvenience during construction of the line or later.

When fences, hedgerows or drainage dikes have to be moved the pipe lines replants them with new facilities after the line has passed through. If a particular request was made not to uproot certain trees, the route of the line was altered to go around them.

Sometimes pipe lines transplant small trees and shrubs to allow the line through, and then retransplant them to their original positions. Within two years, pipe line officials believe, it will be impossible to see where the line was laid.

In the Don Valley a number of control valves, probably four of them, will show above ground. An
East York woman suggested they be covered by small rustic "doll houses"—about three feet high—to merge with the rural setting. The suggestion has been adopted by the Company.

Present plans call for the line to be served by one pumping station to be located at Sarnia. The station will be equipped with pumps driven by three 500 horsepower electrical motors. The London terminal station, built by Shaw Construction Co. of Sarnia, adjacent to the proposed marketing bulk plant, is so designed that it can be converted into an additional pumping station to raise the line's initial 39,000 barrels a day capacity to 49,000 barrels a day. It is expected that the completed line will begin operations at about 22,000 barrels a day. It will be stepped up as demand requires.

Products are put into the line in "batches." A batch is the amount of a product pumped in one continuous operation. The different product batches are fed in one after another. They travel through the line much like containers in a pneumatic tube, pushing one another along.

Why don't they become mixed? Although several engineering factors are involved, mixing is fundamentally avoided by strict control of the speed at which the products travel the line.

Left to their own devices, the products would not all travel at the same speed. Some—the lighter ones—would move faster than others. In time they would overtake the slower-jovied products, climb over them and cause a commingling of the products.

The dispatcher, by control of pressure and other elements, pushes the products through the line at such a speed they do not have a chance to slow down and mingle. On a 22,000 barrel-a-day schedule, the products would travel at a fast walking speed, about four miles an hour.

Under these conditions, a batch travels at a steady speed and buttresses itself against the preceding product. Facing edges, like two walls of liquid, form at front and rear of each batch.

These walls, of course, are not solid, and it is at the facing edge that a very minor degree of mixing occurs. If it were possible to cut open a pipe line while in operation to obtain a sectional view of a small area of mixing, one would see a tiny buffer between batches. When the batches are drawn off, this buffer will be divided between the two products it had separated and absorbed without any harm. Purity of the product while passing through, and being taken from, the line is of major importance. To ensure this purity several control measures will be adopted.

Sampling apparatus will be provided at the pumping station and delivery terminals for routine tests of the products. As a further guard against any possible contamination during transit, samples of each batch will be taken and returned to the refinery laboratories at Sarnia for final check.

To prevent internal corrosion a chemical rust inhibitor will be pumped through the line. It forms a protective coating on the inside of the line, leaving the surface like polished steel. If necessary, scrapers will be sent through to clean the line of any scale.

Operation and control of the line will be patterned largely on systems presently being used in the United States. Captain Stuart and his key personnel have studied operations on the 1,201-mile Plantation Pipe Line Company line which runs from Baton Rouge, Louisiana to Greensboro, North Carolina. This line carries 31 different products for 11 companies.

While Sarnia is the first major products line in Canada, it has a smaller predecessor. Imperial pioneered product lines in the Dominon in 1937 when it built an 814-mile line near Fort Norman in the Northwest Territories. This line is used for brief sub-Arctic summer operations to carry products around the capids on Bear River for re-transfer to barges.

The first products line of authentic record in North America was built almost 90 years ago, in 1892, by the United States Pipe Line Co. from Titusville to Wilkesbarre, Pa., a distance of about 280 miles.

Other smaller products lines were erected over the eastern seaboard as the century advanced, but it was not until 1929 that products lines began to boom. Soon lines of varying sizes, mostly carrying gasoline, sprouted throughout the U.S. Their North American and world growth continued until it was dimmed by those miracles of wartime exigency. Little Big Inch and Operation Pluto.

The Little Big Inch, a 26-inch diameter pipe line, received its name from its big brother, Big Inch, a 24-inch crude-carrying line that ran from Texas and Louisiana to Pennsylvania and New Jersey. The Little Big Inch straddled the U.S. from Beaumont, Texas, to Linden, N.J., feeding the United Nations with urgently needed tank, plane and ship fuels. Today, the 1,475-mile line carries natural gas.

British-built Operation Pluto—Pipe Lines Under the Ocean—supplied gasoline for the mechanized forces of the Allied invasion of Europe through 20 three-inch pipe lines, laid under the English Channel by the Royal Navy and British Merchant Navy.

Imperial’s Sarnia line is not being built under such exciting conditions, nor to meet such a drastic emergency. But it is being built to meet the domestic and industrial oil needs created by the growth of Ontario. It is in itself an integral part of that growth and expansion.  

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Toronto's skyline from the south. The new pipe line will help to supply the city's industrial and domestic oil needs.
Of Field and Finance

In February, Canada's western oil development entered its sixth year since the discovery of Ledcor. As the anniversary arrived, oil exploration and development programs that are expected to new records were well underway in Alberta, Saskatchewan, Manitoba and British Columbia. It is estimated that $200 million will be spent on these activities in 1952.

Estimates are that 2,000 new wells will be drilled in the west this year. Some 200 drilling rigs and 100 exploration crews will be at work. The exploration effort will be 50% that of five years ago.

To help finance the share of this and other costly jobs, Imperial Oil recently offered nearly 2% million shares of capital stock for purchase by its share-holders. The sale of stock put into the company treasury about $80 million which will be applied on a major expansion program in all divisions of Imperial's operations. The program was drawn up for a 16-month period, from last September to the end of 1952, and present plans call for investment of $120 million during this period.

By the end of February, the company had 25 geophysical crews exploring the areas of the West. Of these, 11 were in northern Alberta with 10 elsewhere in the province; three in Saskatchewan; and one in Manitoba. The oil industry as a whole had 131 crews in Alberta; 16 in Saskatchewan; three in Manitoba; and nine in B.C.

Imperial also had 13 geological core drilling survey crews at work, all in Alberta. Industry figures were 99 crews in Alberta and five in Saskatchewan.

Early in March the company was drilling at Clear Hills, 105 miles northwest of Peace River town, and at Watham, 60 miles southwest of the town. Rigs were operating for Imperial at five locations in the Peace River district, and one well, Atikame, was being drilled 20 miles northeast of the city. Operations were being made to drill near Conseal, Saskatchewan.

Imperial reported two discoveries early this year: a gas well near Two Hills, 60 miles east northeast of Edmonton and an oil discovery in the Camrose area some 40 miles southeast of Edmonton.

In the latter part of 1951 and in January and February this year the company abandoned unsuccessful wells at a number of locations in central Alberta and the Peace River. Among them were Lethbridge Creek and Rat Lake, on the rim of the North-west Territories, farther north than any other Alberta drilling.

The oil industry as a whole reported an average of one oil or gas discovery in every three days of January and February. Of the 21 discovery wells, 11 found oil and 10 struck natural gas. These finds remain to be evaluated but among the most discussed is a Texaco-McColl Petroleum discovery at Bonnie Glen near the Wizard Lake field. Wizard Lake is now believed to have reserves of more than 50 million barrels and tops the list of 1 million gas and oil discoveries of 1951.

Canada's oil reserves, now close to 1.22 billion barrels, are 20 times what were known before Ledcor was discovered. But exploration must continue on a huge scale in the effort to find further reserves that will make the country self-sufficient in petroleum.

James McGrath 1899-1951

James McGrath, who started with Imperial Oil as an office boy at 13 and rose to become its comptroller at the age of 41, died in 1951.

Jim McGrath was one of a family of six brothers and a sister who went to work for Imperial in their native Sarnia. Between 1912 and 1915, with time out for service in World War I, he was employed in various branches of the manufacturing department. In 1933 he became assistant manager of credit and in 1940 he was appointed comptroller, in charge of the company's accounting operations throughout Canada.

Mr. McGrath was an active supporters of welfare work among his positions was vice-president of Community Chest of Greater Toronto and treasurer of the Council of Catholic Charities.

Mr. McGrath is survived by his wife, the former Edna Lambert, a daughter, Suzanne, and a son, James; four brothers, Irving and W.B. of Toronto and J.B and F.P. McGrath of Sarnia. A sister, Mrs. Ida E. Feinster, resides in Calgary.

PERSONALITIES IN THE NEWS

L. D. Fraser Becomes General Manager, Marketing Department

L.D. Fraser, formerly manager of the Maritime marketing division of Imperial Oil, has been placed in charge of the company's sales organization throughout Canada with headquarters in Toronto. As general manager of the marketing department, he is succeeding A.G. DeMoor, who has relinquished the position to devote more time to his duties as a director of Imperial. Born in Ottawa, Mr. Fraser joined the company in 1928 in the marketing department at Montreal. He served as assistant resident manager and resident manager in Ottawa before being assigned to the marketing department in Toronto in 1942. After three years he became assistant manager of the fuel oil department, leaving this position in 1946 to become assistant secretary of the company for one year. He returned to the marketing department and until his retirement in 1950 headed the fuel oil and petroleum sales department.

C.T. Wright, New Assistant General Manager, Marketing

C.T. Wright, recently appointed assistant general manager of Imperial's marketing department, is a native of Dundas, Ont., where he was educated. He joined Imperial in 1925 as a salesmen in Chatham and later was transferred to Windsor and London as district manager. In 1928 he was appointed chairman of the marketing department's distribution committee in Toronto. In 1943 he became manager of cost and operating in the marketing department and two years later was named operations co-ordinator. In 1950 he became general operations manager of the marketing department.

C.A. Robinson Heads Manitoba Division

Succeeding L.D. Fraser as manager of the Manitoba marketing division, C.A. Robinson is a native of Drayton, Ont. He joined Imperial in 1923 as a salesmen at Windsor and later served as resident manager at Owen Sound, Brantford, Hamilton and Toronto. He became district manager for Toronto in 1944. He successively held the appointments of merchandise co-ordinator, sales manager and assistant manager of Ontario division. Last year he was transferred to Alberta as assistant manager of that division where he served until his present appointment.

S.S. Smith, 40-Year Button

Samuel S. Smith, the Maritime marketing division at Amherst, N.B., was recently presented with a 40-year service button. Joining Imperial in 1911 at Saint John, N.B., he served in both office and plant and held in succession the positions of ledgerkeeper, general clerk, barcll clerk and in 1929 acting supervisor. In 1939 he was appointed agent at Charlottetown, P.E.I. He moved to the cost and operating department at Halifax in 1944 as plant and operations assistant and five years later became station auditor.

Mr. McGrath was an active supporter of welfare work among his positions was vice-president of the Community Chest of Greater Toronto and treasurer of the Council of Catholic Charities.

Mr. McGrath is survived by his wife, the former Edna Lambert, a daughter, Suzanne, and a son, James; four brothers, Irving and W.B. of Toronto and J.B. and F.P. McGrath of Sarnia. A sister, Mrs. Ida E. Feinster, resides in Calgary.

John McCauley Receives 40-Year Button

John McCauley, supervisor of Sarnia refinery salary payroll, was born in Toronto. He joined Imperial in 1919 as a clerk in the Montreal marketing department and in 1920 was appointed chief clerk. In 1925 he was transferred to a similar position in Saint John, N.B. He went to the treasurer's department at Sarnia three years later. In 1940, he moved to the thrift and pension division of the comptroller's department and became chief clerk in 1949. He transferred to his present post when the comptroller's department moved to Toronto last fall.
Floyd C. Loutz Heads New Pipe Line Department

Floyd C. Loutz, manager of Imperial's new pipe line department, was born in Halifax and educated at Dalhousie and McGill universities. He holds a degree in chemical engineering. Mr. Loutz joined the Company at Sarnia in 1925 and later became assistant superintendent of Imperial's Corvette refinery. In 1939 he went to Esso's Barachois, Collierville, as refinery superintendent, returning to Canada in 1934 as superintendent of Regina refinery. He subsequently was appointed chairman of the manufacturing technical committee in 1938; manager of the St. Clair Proceeding Corp. Ltd. in 1942 and returned to Imperial as assistant general manager of refineries in 1944. He became assistant to the vice-president (supply and transportation) in 1949.

R. A. Parkinson Becomes General Assistant Pipe Line Department

R. A. Parkinson was born in Huntsville, Ont., and graduated from the University of Toronto in commerce and finance in 1935. He worked as an investment executive and in 1939 obtained a law degree from Osgoode Hall. He practised law until 1942 when he enlisted in the Canadian Army. After the war, Mr. Parkinson joined Imperial at the Los Angeles office of the marketing department as assistant to managing director. In 1948 he transferred to the department of employee relations and in 1962 was posted to the Sarnia products pipe line division serving as assistant right-of-way supervisor until his present appointment.

Bruce H. MacKenzie Appointed Chief Engineer Pipe Line Department

Bruce H. MacKenzie, recently-appointed chief engineer of Imperial's pipe line department, was born in Toronto. He graduated from the University of Toronto in 1928 with a B.A.Sc. degree in chemical engineering and in 1939 joined the Company at Sarnia refinery. In 1943, he was posted to St. Clair Proceeding Corp. as an inspection engineer. On his return to Sarnia refinery in 1945 he was engaged in process engineering work. Early in 1961, he was made coordinator for the Sarnia refinery expansion and modernization program. In 1962, he was elected director of the Canadian Oil and Gas Association. Mr. MacKenzie is a member of the Canadian Institute of Mining and Metallurgy.

William S. Arndt, 40-year Button

Recently promoted with a 40-year button to recognize his service with Imperial, William S. Arndt started to work for the company as a cooper at the Winnipeg marketing plant in 1914. The following year he transferred to Calgary warehouse in the same capacity. Subsequently he was made general warehouseman, a position he held until his appointment as checker in 1925. Mr. Arndt will not reach retirement age for another five years.

Peter F. Taylor Retires After 40 years

Peter F. Taylor of Alberta marketing division has received his 40-year service button and retired from the Company. Mr. Taylor joined Imperial in 1914 as a checker at Edmonton. In 1916 he enlisted in the Canadian Army and served overseas. Upon discharge he returned to Imperial at Edmonton. In 1945 he became warehouse foreman and held that position until his retirement early this year.
Filming
“Newfoundland Scene”

The excitement and tumult of whale and seal hunts, the rugged beauty of the land and sea and the strong character of the Newfoundland people provide a wealth of camera subjects for a unique color movie.

Making Imperial Oil’s newest film, Newfoundland Scene, was a photographer’s dream—and a film editor’s nightmare.

Everywhere the cameramen turned there was something just begging to be recorded on color film. Newfoundland, oldest outpost of the New World, is an island of rugged beauty, rich in tradition, with people of strong character who extract a living from stubborn soil and dangerous seas.

The photographers stood in a land whose history goes back to the discovery by John Cabot in 1497. This was the island from which Marconi sent his first trans-Atlantic wireless message—from Signal Hill in St. John’s. There was Gander airport with its proud wartime history and now busy with the airliners of a score of nations. There was Corner Brook with the biggest paper mill in the world. And there were the Newfoundland ships, famous for centuries.

The camera couldn’t resist the ships. They filmed dozens of dories, sealing ships, whaling ships, the supply ships of the outports and the boats of the cod fish fleet which works the Grand Banks, one of the world’s great fishing grounds.

The film was to be 1,200 feet, to run about 30 minutes. When the photographers had finished, they had 15,000 feet, enough to run nearly seven hours. Editing was the big problem. Now that the job is done Newfoundland Scene has just over 1,400 feet of film and runs about 38 minutes.

It took two years to make the picture because Imperial’s assignment was a difficult one. The Company wanted a film of a specific type; one in full...
Newfoundland fishermen spend part of their time forming and these men are netting tiny fish called caplin which will be used to put life into the shallow anabarile soil color, which would convey, rather than show in detail, the intertwining of traditional and modern ways of life and some of the occupations in Canada's tenth province. It was not to be a travelogue, but instead was to be an attempt to capture on film the robust spirit of the Newfoundland people.

To make the film Imperial commissioned Crawford Films of Ottawa, the organization that had made the prize-winning The Loon's Necklace sponsored by Imperial and had completed other film work for the Company. Crawford put two production crews on the Newfoundland job. They made three trips to the island, each lasting about two months. On one trip F. R. 'Budge' Crowley travelled 6,000 miles by land, sea and air.

In its completed form the film has many exciting and beautiful moments. The outports, where codfish are dried on big flat rocks in the sun and wind, were wonderful camera material, almost as intriguing as the names of the ports—Punch Gut Tickle, Darnable Bay, Hibernia-Mun-Go, Run-by-Guess, Spy Hole, Maggoty Cove and Heart's Content. Many of the outports are glimpsed in the film.

Newfoundland Scene includes an unscheduled bit of drama involving a Grenfell Mission doctor. The camera was set to photograph him as he made his rounds by dog sled during the winter. While the scene was being taken the dogs suddenly began to battle. They piled on the lead dog, trying to kill him and were stopped only when the doctor risked his life to separate the fighters.

The sea-scenes in their way are equally exciting. Probably the two sequences that stand out for most people are the whale and seal hunts. On the whaling trip, sound men went along with the cameramen. The orders of the captain and the调度 of the crew were recorded while the action when the whale was sighted and the chase was on were being photographed.

The fishing boats of Newfoundland often are powered both by the traditional sails and modern oil. This fisherman is leaning on a fuel drum while mending a rip in his sail.

The film production crew were all "landsharks" and the trip to sea for the whaling and sealing and cod fishing were tough assignments for them. Mr. Crawford admits he wassearch for four days on the whaling trip. But the film crew stuck to their posts.

A sealing expedition is a major enterprise in Newfoundland and Crawford Films recorded a hunt from the noisy foghorns on the decks to the conclusion of the hunt. They "shot" the seal-spotter aircraft, and the seal herd as they saw it from the ship. The camera caught the seal hunters jumping off the ship to the icefloes with gaff in hand and pack on back. There are scenes of the sealers at work, and later, as night falls, shots of them returning to the ship.

The actors give authenticity to the picture because they are the people of Newfoundland themselves going about their everyday jobs, left and right.

Many of the technical problems of the cameramen were ironed out by the outstanding co-operation of the Newfoundlanders. When Budge Crowley was aboard one of the fishing ships, he wanted to get some footage of another fishing boat close by. The skipper of the dragger, Captain Baxter Blackwood of Blue Spruce picked a day when it was too rough to fish. Then he called one of the other fishing captains on the ship-to-ship radio telephone and asked him if he would help while motion pictures were taken.

Budge Crowley told the rest of the story this way in one of his reports to Imperial: "The captain readily complied, and of course, all the other captains of all the other ships of the fleet heard the message go out over the air. All of them turned to radio in to our captain asking if they could come over and have their pictures taken too.

"Soon, several ships started coming in over the horizon, and by using the radio we were able to control the speed and direction of each ship, and get just the type of footage we wanted.

Sealing men wait to board the Algavie after a day's work on the ice. Sealing begins in March and lasts about a month.
The arrival of the supply ship is an event in any outpost. It is often the only link with the "outside", with friends and the life in cities. Stanley Brads is filming the Northern Ranger as she leaves St. Anthony near the northern tip of Newfoundland. He arrived on board the Ranger to obtain off-shore fishing scenes

Using themes from traditional songs and ballads of Newfoundland, William McCauley, below, director of music for Crawley Films, arranged a distinctive musical score as background for the film. The recorded music was synchronized with narrator Frank Poddie, dubbed on to the soundtrack from the months of shooting was assembled. Sections were spliced together, taken apart, and joined together again. Further cuts and sequences were tightened and placed in order. At last the picture began to take its final form for a first "rough cut."

William McCauley, the film company's music director, was assigned the job of arranging a special musical score. He worked eight weeks on it. He chose themes from the catchy Newfoundland songs and wove them into appropriate sequences. For instance, he used the Sealer's Song for the sealing sequences. To a Newfoundlander the music is typical, but to the mainlanders it might be a little confusing because it is also the tune of The Girl I Left Behind Me.

Sound effects throughout the picture were handled by the specialists Paul Harris and Tony Betts. Radio actor Frank Poddie was called in to deliver the film's commentary. His voice, the sound effects and the music by a 26-piece orchestra were recorded and put on film by Rod Sparks.

Newfoundland Scence was ready for printing and when the prints were made public showings began with a world premiere at St. John's. The picture will be available at Imperial Oil points across Canada and will be shown on the rural circuit of the National Film Board. Many Canadians will have an opportunity to see a vivid portrayal of some of the more rugged aspects of life in Newfoundland.

The men of the Algerine scan the floe for first sight of the seal herd and listen for the cry from the crow's seat: "Old and young ahead!" as they near the sealing grounds
Dressed for cold weather, this man is on the safety platform of the tank car loading racks at Imperial's Edmonton refinery.