Review in Review

Snowshoes for Horses
Stewart, British Columbia's and Imperial Nanaimo's most northerly port, may be nearly a ghost town now, but it's haunted by a colorful past. It was stoked out as a United States possession during the Yukon's gold rush of 1898 until the Alaska boundary treaty of 1903 awarded it to Canada. It was once a prosperous mining community and it may be again if the nearby Granduc copper strike is as big as hoped. And, according to the Nanaimo's chief engineer, Roger Pease, Stewart can claim one of Canada's most unusual inventions. The late Bill Crawford was an Imperial Oil agent there for years and one of his problems was distributing oil products through deep snow with a team of horses. So he invented snowshoes for horses, swears Pease. Stewart's also the only place in Canada where the Imperial agent has American customers. He regularly drives across the border into Hyder, Alaska, 200 yards away, to deliver furnace fuel to a handful of American homes.

New Look for Learning
Where else could you learn that potato chips contain butylated hydroxyanisole? Or that you can buy an amphibious armored car with twin grenade launchers as an optional extra?

Where else but The Learning Page?
Redesigned in this issue and rechristened 'The Last Word', this page of informative and far-out facts has become an institution. The first Learning Page appeared in June, 1964, with some rather basic facts on gasoline tax and the countries using the most oil.

As the months passed, the items became more exotic: Noah coated his ark with asphalt; it's an offence if you don't leave the scene of an accident in India and Malaya; and gasoline can now be cut like butter.

In its two years, the page has been in every issue but two. The Review has even had a special Learning Page—one devoted entirely to facts about refining (you can buy a portable refinery now, for instance).

The oddest item that's appeared? Well, there's this cow down in New Hampshire with this porthole fitted into her side, and... well, turn to page 25 and read it yourself.

Foreign Capital

Next year, while Canada is celebrating its hundredth anniversary, the Canadian oil industry will reach a significant milestone of its own: On balance, Canada is going to become self-sufficient in petroleum in 1967. For the first time the value of petroleum industry exports will equal the value of imports.

This is a big change. Less than 20 years ago, we imported 90 per cent of our oil, and Canada's one major oil field - Turner Valley in Alberta- was declining rapidly. Then Imperial discovered the Led nostr field, and the country was on its way to the goal it will reach next year.

Since Ledcos came in, $712 billion has been invested in oil exploration and production in western Canada. A lot of this was capital generated by the industry itself and ploughed back into more exploration and development, but a lot also came from abroad. This foreign capital was essential to the development of the western oil fields. In fact, it wasn't until 1962 that annual gross revenues from oil and gas operations began to exceed annual expenditures. But the industry's cumulative deficit still totals more than $2 billion.

Why didn't the oil industry get all its capital inside the country? Canada simply lacked the capital resources to finance the oil development as well as the other major developments of the postwar period. Many people did invest in oil in those days, of course, but to a large extent Canadian risk capital was 'hard-rock' oriented. Investors were familiar with mining, but wary of big-scale oil exploration and development, which was new and strange.

We were lucky that foreign capital was available 19 years ago when we needed it. Without it we could still be an oil-poor nation. Canada is a great country and a country of great resources. But resources must be developed and development requires capital—sometimes in huge amounts. Keeping all this in mind, perhaps it would be well to remember a remark W.O. Patrick made at Imperial's annual meeting last April.

'Capital flows must be readily available,' the president said, 'to the point where it is most welcomed.'
Perfume and plastic foam, Saccharin and solvents, Tires and TNT.

What connection could there be? They all contain a simple, sweet-smelling substance that's been heralded as a chemical of the future, a savior of Democracy and a wonder of the world.

And you probably never heard of it.

It's toluene, as in tri-nitro-toluene, better known as TNT. Since 1940, when the Second World War created an enormous demand for TNT, toluene has been derived from crude oil instead of coal and it has found an astonishing array of industrial uses.

Toluene now boosts the octane rating of your car's gasoline, appears in solvents for the car's paint and makes toluene sulfonates for detergents to wash your car.

If you oxidize toluene, you get benzoic acid which seasons and improves the flavor of tobacco. Put that in your pipe and smoke it.

Toluene hides in paradichlorodinitrobenzene—used to control fungus and mildew growth in paints—and combines with other chemicals to form orthotolueneazo-1,8-naphthalimine, which puts the color in cosmetics.

And R. J. Nims, chemical sales manager for Imperial Oil, says toluene's a darn good solvent—it's more effective than most others. As a solvent, it's in paints and coatings, gums, resins and rubber cements.

Although toluene is almost as common as air, it may be the most anonymous important chemical of modern world. Even so, it's not a household word; that hope was dashed when the cumbersome trimethyltoluene was abbreviated to TMT and toluene the last T.

And there's simply nothing very special about toluene on its own. It just sits there, looking like water. It's not rare: it's found in nature, in the balsam of the toko, a South American tree that gave it its name, and in pine resin. It's a hydrocarbon—a hydrogen and carbon compound—and there are plenty of these around. It's a member of a family of aromatic hydrocarbons—they have disgustingly sweet, penetrat-
The world did Raphaeldez once, briefly: Tuleone built by Alliama, the Paris Expo of 1867 when it was exhibited in the form of what one admiring chronicler called a great quantity of beautifully crystallized nitro-
tolene.

He displayed there its discovered evolove in 1838 or 1841, depending on what you believe—there’s a disagreement about this fact. Anyway, in 1846, two German chemists prepared the first synthetic toleone by reacting formic acid with tartaric acid and of its expense the process didn’t set up much commercial interest. Four years later, Charles Breakfield Manfield, an Englishman. obtained toleone from the coking of coal. For the next 90 years, that’s where most of the world’s toleone came from.

The coking-coal method made toleone more readily available to experimenters and by 1840 German chemists discovered that by the nitration of toleone they could make nitrotolene—a pale yellow powder that was to change the course of modern warfare. In 1849, a German factory was manufacturing TNT.

Coking produced nearly all the toleone until 1950s, when the United States Army began using a different method. In 1950s the Army asked the oil industry to mippet its equipment scattered across the country to provide “all fabrication” of toleone made from oil on a large scale outside the laboratory.

In 1952, after the Army’s request, the Germans took Paris. But within two months, working under strict military secrecy, the Germans proved that they could produce toleone in almost unlimited quantities. The Alliama had mobilized more than 100 million a gallon a year—10 times as much as in the First World War. For every salvo of mustard gas, which was capable of making the tensile phenol formamide nitro-
leone gas, and it was used to make the most effective explosive used today.

This TNT blend, brought ready-mixed, doesn’t concentrate its explosive power. It is an explosive that is effective. It is the chemical that is needed to start a fire in the grass, in the sand, in buildings, in vehicles, in products that start with toleone,” he says. “It will never go out of style.”

George Brydon, formerly of Sarin, is the program manager for Imperial Oil’s marketing department and the department’s assistant general manager.

Educated in Kentville, N.S., and Sumna, Mr. Brydon began his career in 1970 as an office clerk in Sarin and advanced to the position of senior cost accountant in the company’s office. With the end of the Second World War, his brother went to St. Clair Processing Corporation Ltd., an Imperial subsidiary that operated part of the Crown’s Polymer Corp-
ation plant that made vital synthetic rubber.

In 1946 he was transferred to the manufac-
turing department in Toronto, and ultimately became assistant manager of refinery operation. He joined the marketing depart-
ment in 1950 and six years later was named manager of marketing research and econom-
ics. In 1963 he went to Halifax as assistant manager of the Atlantic marketing region.

Within a year he returned to Toronto to become assistant manager of commercial sales planning and coordination. He was appointed manager of commercial sales in December, 1965.

Married, with one son, Mr. Brydon enjoys bridge and photography in his spare time and admits to a weakness for fine cars.

W. D. Archibald has been appointed man-
ger of Imperial Oil’s Ontario marketing region.

Born in New York City, Mr. Archibald is a graduate in economics of Princeton University. He served with the United States Army in the southwest Pacific during the Second World War and on his discharge held the rank of first lieutenant.

He joined Esso Standard Oil Co. and Standard Oil (N.J.) before coming to Canada to join Imperial’s coordination and economics department in 1957. Two years later he be-

came head of the department’s economics and statistics division. He moved to the trans-
portation and supply department as manage-
ment assistant in 1959 and after three years became manager of the supply division.

In 1963, Mr. Archibald joined the marketing department as manager of the research and economics division and a year later was ap-
pointed assistant manager of the Ontario marketing region.

A Canadian citizen since 1959, he is married to the former of a boy, 16, and a girl, 14. A major interest in his free time is in the Civil War. He is a member of the Union of the Confederate States of America.

In 1965, with one son, Mr. Brydon enjoys bridge and photography in his spare time and admits to a weakness for fine cars.

Hugh G. Grovsby, a veteran in the oil indus-
try with experience in many parts of the world, has been appointed manager of Imperial Oil’s refinery in Dartmouth.

Mr. Grovsby joined Imperial in 1934 as a chemical engineer at the Montreal East re-
finery after graduating from McGill University. He went to Colombia late in 1934 to work at the Balanza refinery of the International Petroleum Corporation, at that time an Imperial subsidiary. He was promoted to chief chemist and later refinery manager. In the Second World War he began service as a gunner with the Royal Canadian Artillery and spent a year with the British Army working in petroleum supply.

After the war—he was discharged with the rank of major—Mr. Grovsby went to the Dart-
mouth refinery as chief chemist and technical superintendent until 1951. He then moved to the refining coordination division of the man-
ufacturing department in Toronto and eventually became assistant manager. He returned to Dartmouth in 1951 as plant superintendent, a post he held until his present appointment.

Mr. and Mrs. Grovsby have a son, 18, and three daughters, 16, 19 and 21. His hobbies include fishing, canoe camping, badminton, golf—and the mental—philosophy.
The MS Imperial Nanaimo cruises Canada's most spectacular coastline

by PAUL GRECOVE
photographs by Horst Ehrlich

When logger Charles McKinnell and his wife were shipwrecked in the Queen Charlotte Strait off the British Columbia coast two years ago, they were prepared to die.

It was a Columbus mid-December night and the storm that had tossed their dinghy afloat was still screaming around them. They were castaways on bleak Jeannette Island, 250 miles northwest of Vancouver. It's unmarked on most maps.

On the third day they ate their last provision—a wiener and a slice of bread—when they were convinced a passing ship had seen their signal fire. It hadn't.

Six days after they were stranded, another ship neared the island. This time, those on board saw McKinnell desperately waving something white against the black of the shoreline. A boat was sent to investigate and the McKinnells were saved.

The ship was the Imperial Nanaimo— to the surprise of nobody on the desolate northwest coast who heard the tale of shipwreck and rescue.

The Nanaimo, a bluff little tanker that has dodged with ice and waves and some of the most violent weather in the world, has a history of being more than just another ship.

Her crew has rescued individual fishermen from drowning and once saved an entire northern British Columbia village from freezing to death.

In an eventful day-to-day movement along the coast from Imperial's Iqo refinary, outside of Vancouver, to Stewart, B.C., a village 900 sea-miles northwest, her crew of 10 are looked upon more as saviors than as sailors.

The Nanaimo is one of two Imperial tankers that service the Pacific coast, from Vancouver Island north to Alaska, with just about every oil product that Imperial makes. The Imperial Vancouver

In morning mist, the Imperial Nanaimo (at left) sails into a lonely outpost on the British Columbia coast. A single trip may last as long as 90 days with more than 320 landings on the way. As the ship approaches shore, a light rain spatters the window of the bridge (right)
calls at all principal ports along the coast. At three drop-off points, the Nanaimo picks up the cargo and distributes it to the hundreds of pocket-sized ports that punctuate the coast and inland waters.

The Nanaimo, 1275 feet long and with a capacity about one-fifth that of the Vancouver's, shares the often-wild open sea with many of its customers, the fishermen whose livelihood depends on the Pacific's salmon, halibut, herring and whales.

With its white superstructure in the stern and the four booms forward that open like a flower, she looks like a ship, but that's a disguise. She's really a floating service station and mobile bulk cargo plant. She hauls goods as small as quart cans of lubricating oil, bigger items like barrels of gasoline to run the chain saws and diesel fuel for the heavy equipment and power plants of logging and iron ore mining camps; and storage tanks often put on log rafts for floating lumber camps.

The Nanaimo plies the coast all year round, but her busiest time is during the height of the fishing season—May to late October—when she is continually on the run; a single trip may last 90 days with more than 320 stops along the way. She can run through the season at a top speed of 18.5 knots (compared with Vancouver's 114), but her roughest passage, a 110-mile trip from Prince Rupert to the Queen Charlotte Islands, can make her crawl through swells that have sent bigger, ocean-going ships crashing on the craggy shore.

Captain Bud Allan, for 22 years a sailor with Imperial, must guide the Nanaimo through water savage enough to run her ashore, and with reefs shallow enough to snap the propeller shaft. When she moves from the sea to the needls that indent the coast, she passes through some inland waterways so narrow that a crewman can literally hop from ship to shore at the Nanaimo's stern as she enters port. This call is at the tiny landing of Khutzut (top), a village tucked between the mountains of Suwanile Island, which is about halfway between Port Hardy and Prince Rupert. Khutzut is home to a fish cannery and an Indian settlement. The ship's crew once became pipeliners when they laid three-quarters of a mile of pipe line here and fishing camps became mechanized, the demand for larger ships grew. In 1937, the Nanaimo, then called the Beccie, was added to the west coast fleet and a year later the Vancouver was built.

Captain Allan joined Nanaimo's crew in 1946 as second mate and became her captain in 1965. The relief captain is Cliff Totten; the chief engineer, who has spent 20 years with the ship, is Roger Pease and the relieving chief, a relative newcomer with 10 years, is Bob Rogers.

When Captain Allan and his crew leave on a typical trip from Prince Rupert, the centre of the Pacific fishing industry, their first stop may be a tiny, temporary fish camp, set up by a canning company to supply fishermen with food and fuel and to buy and store the fish they catch.

The fishing crews, many of them Japanese, Canadians and Indians (both traditionally good fishermen) live a chaotic life of danger as they pit their 35-foot boats against a hostile ocean and the risk of a bad season.

Most of them own their boats and contract them to a cannery (although the canneries sometimes have boats themselves) and they're often paid in advance with loans of fish coupons they use as money at company stores.

The Nanaimo accepts these coupons, too, as payment for the oil, gasoline and grease it provides to the camps. Each spring the ship refills fuel tanks along the coast and refits their motors and pipes. A Nanaimo sailor must be a mechanic as well, and something of a strongman. A derrick lifts the red and blue oil barrels over the ship's side, but often the crew must haul tons of sandbags to shore up a lifting tank or a supercargo—the man who handles the bookkeeping and measures the level of fuel tanks—coast climb hundreds of ledges to climb to a tank high up on a cliff face.

Heading inland, the Nanaimo threads through winding inlets of overwhelming beauty in search of a lumber camp. The camp, having logged the spruce, pine and cedar of one area, may have been towed away—on water. Many camps sit on wood floats or rafts holding the tanks, hoses, perhaps the school and even, in one case, a church. Whole families live aboard; the babies play in a fenced 'backyard' and the bigger kids wear life jackets as matter-of-factly as

As Nales Landing, one of the ship's early calls, loggers line up on a floating dock. The houses are built on rafts lashed together. When the loggers finish with the timber of one area, they tow the whole town to its next stop. Most children, like these girls on a raft (below), wear life jackets outdoors.
boys in Vancouver wear windbreakers.

Back in the Pacific, the Nanaimo
makes for Stewart, its northernmost
port with a town line 200 yards away
from Alaska. A booming gold town in
the late 1920s, Stewart is now the next
thing to a ghost town. But it's only
30 miles from the rich Grandooz copper
discovery that may bring its renais
sance.

On other trips, the crew of the Nanai
mo may roam to Trouble Island on
Seymour Inlet just north of Queen
Charlotte Strait, where the tides are
fierce, or relax while hunting on the
Queen Charlotte Islands where the
deer are so dense there's no bag limit.
They may lay three-quarters of a mile of
oil pipe from a cannery to a nearby
village, or pick up a couple of fishermen
whose boat sank when they overloaded
it with salmon.

Or, like a Nanaimo crew under Cap-
tain Doug Marshall, Allan's prede-
cessor, they may be called on to rescue
a village. It was at Alice Arm, B.C., a
far northern inland port southeast of
Stewart, and it was 14 years ago, but
it's still a minor legend.

In the early winter freeze-up, Alice
Arm's cove was choked with ice. The
50 villagers had been without heating
fuel for several days during a subarctic
cold wave.

When the Nanaimo arrived on its reg-
ular run, she couldn't enter the ice-
jammed port, and the men of the village
started dynamiting a path for her. It
took 60 charges and a whole day before
the ship was close enough to land her
precious cargo.

Waiting onshore was the whole vil-
lage, even the children, holding empty
cans. They filled them with the fuel and
then returned to their houses—all with-
out speaking a word. In this eerie silence
the Nanaimo slipped away to her
next wilderness port.

The Nanaimo serves fishermen with
goods as small as quart cans of lubricat-
ing oil, but much of her freight is the size
of the barrel a sailor is guiding aboard a
30-foot fishing craft from New West-
minster (at left). The boat came alongside
to refuel on the run, as many coastal
fishing boats often do. The ship's crew are
called upon to be more than just sailors;
they must double as mechanics, pipers,
strongmen and even rescuers. In between,
they perform a sailor's traditional tasks,
like painting the bridge (above right).
It's night, but one of the crew is still at
work, unloading a barrel (bottom right).
Toronto’s traffic computer doesn’t actually drive you home by itself, but it sure helps get you there a whole lot faster, cheaper and healthier.

Take away Casa Loma, the new city hall, Scarborough Bluffs, and Bay Street, and what has Toronto got? Just the most scientifically advanced traffic-control system in the whole world, that’s what. It sits in the lobby of the old city hall, quietly speeding motorists through the rush hours, reducing traffic accidents, saving money, sparing lives, and spends its spare time figuring out what traffic will be like in 1980. Using techniques never attempted before and a theory some experts considered impractical, Toronto authorities have put a central computer in charge of traffic lights over the whole metropolitan area. From tentacle-like detectors buried near each intersection, the machine can gauge the momentary needs of motor traffic and adjust the phasing of each traffic light to suit that need.

As one enthusiast put it when the system was being installed: ‘Not only will traffic signals control the traffic, but traffic will control traffic signals.’ That’s exactly what’s happening now and the computer is doing it so well that traffic authorities in other cities all over the world have journeyed to Toronto to see it, and some have even copied it. But for some reason, Torontonians don’t brag about it. Authorities themselves treat it so matter-of-factly that they’ve never even agreed on an official name for it. It shows up in some city hall reports as the Automatic Traffic Control System and in others as the Automatic Traffic Signal System. Newspapers refer to it simply as ‘the traffic computer’ but they don’t even do that very often. The thing just doesn’t seem very newsworthy except when it blows a circuit.

Most motorists use the system several days a week without ever thinking about it. Few drivers know where it’s in service, much less how it works. Some have seen the computer at one time or another, but since Toronto’s new city hall opened last fall, most people have forgotten that the machine, with all its spaghetti wiring and its space-age accessories, is still squatting in the main-floor lobby of the old city hall, whirring and blinking inside its glass partition.

But if the locals don’t care, many visitors do. Traffic engineers, town planners and politicians from all over North America, Europe and most other car-conscious corners of the globe, have trooped into Toronto to see this elec- tronic miracle. Ernest Margulis, when he was England’s Tory minister of transport, came over for a close look. Henry Barnes, the New York traffic commissioner who invented the ‘Barnes Dance’ system of regulating pedestrian traffic, made a special trip to Toronto to see the computer in action. So did a party of eight traffic experts and professors from Rome.

Toronto wasn’t the first city to think of the whole idea. Denver, Baltimore and Philadelphia each set up some kind of centrally controlled system in the early 1950s. But Toronto, which began shaping its plans in 1957, came up with a system that’s unquestionably far more advanced. The computer system Toronto uses—to mention just one important difference—is the more sophisticated digital type, not the simpler analog style used by predecessors.

Several other cities are now using digital computers for traffic control, but they have all modelled their systems quite closely on Toronto’s. Two are getting set up in West London and Glasgow, as possible pilots for all Britain, and a third is operating on a small scale in San Jose, Calif.

When the whole idea was first suggested in Toronto about 10 years ago, several computer manufacturers scoffed. To achieve what Toronto wanted to do, they pointed out, would call for a complex of equipment so huge that it would almost fill the entire city hall. But other experts were more encourag- ing, and Toronto persisted. Transistor and other developments have since made it possible to put the equivalent equipment into a single room—though Toronto’s traffic men admit they didn’t foresee such a boon. In fact, without coming out and saying it, they leave the impression they might not have tackled the job at all if all the problems and pitfalls had been pointed out to them.

‘We didn’t realize how many mis- takes were possible, and so we just sort of stumbled ahead in our ignorance,’ Sam Caso, Toronto’s traffic commissioner, says now.

Though Caso and his colleagues started work on the scheme in the spring of 1957, they needed seven years to get the preliminary studies finished, the money allotted, and the equipment ordered, built, bought, delivered and installed. One wiring job involved two cabinets which can handle signals from up to 1,000 traffic lights. Each unit—the size of a clothes closet—required 100,000 connections and kept three men busy for 2½ years. Somebody later fig- ured out that the telephone wires the system uses to send and receive inform- ation would be enough to wire a whole public telephone system for a city the size of Fredericton. The whole thing cost $4 million, installed. Even after installation was completed in Novem- ber, 1963 there were basic tests to run and bugs to remove. Finally, a small portion of the system went into regular service in April, 1964. By the end of this year, 500 traffic lights will be hooked into the system, and the rest of the lights in Metropolitan Toronto—about another 200—will be added in 1967.

Even by then, most Torontonians won’t likely understand how the whole thing works, though the basic idea is pretty simple: Along each thorough- fare served by the system, loops of wire...
are burned 1/2 inches beneath the road surface. These loops are sensors which detect vehicles as they approach an intersection. Each loop transmits an electronic tone which stops the vehicle from passing over. This dit-dot ham is flashing along leased telephone lines to the central equipment, where the red traffic signal is sent. This also takes place. (Though it is referred to offhandedly as ‘the computer’, the equipment actually consists of two vacuum tubes—a UNIVAC 1107 and the smaller Kenington Rand 415 which can take over if the 1107 needs servicing. Meanwhile, operation the memory bank and the scanning equipment. And there are less sophisticated pieces of equipment such as a card punch and reader, a high-speed printer, half a dozen reels of magnetic tape and a noisy wire that George Stephenson, the senior man in charge, admits: ‘We have no idea how much wire is here by now.’)

**What It Does**

As it receives each tonal break, the central equipment ‘assesses’ it instantly, ‘recalls’ the standing instructions programmed in its memory bank about how many to let through or hold back, ‘decides’ what timing is needed for the intersection at that moment, and ‘flashes the appropriate instructions back to the control box on the street corner. The ideal situation is to keep traffic flowing continuously but with cars arriving from four directions at an intersection, at once, the east-west or the north-south flow has to yield. The control box alters the traffic lights at which the light traffic switches from red to green to amber, and round again, so there’s a minimum amount of bunching. And it does all that in one-thousandth of a second.

If the computer conducted that process for just one traffic light at a time, it would hardly be remarkable. But with every decision the computer makes about one intersection, it takes into account the conditions existing at that same instant at all the other intersections.

The result of all these Instant Decisions is a flow of traffic smoother and more uniform than any other computer has yet produced. And that, in turn, means savings in time, money, gasoline, brake lining and engine wear. Bumper guards are flatter, no one accelerates any faster, and, consequently, a substantial saving of life and limb.

Perhaps one reason Torontonians haven’t been impressed by these results is that they are, in a sense, all negative advantages. After all, how do you ‘see’ an inevitable accident happening? And what husband arrives home after work and exclaims: ‘Wow! Did I ever survive that traffic!’

Besides, Metropolitan Toronto, now with a population of 1,800,000, and a metropolitan registration of 650,000 (cars, trucks, motorcycles and buses) has grown so quickly that mere congestion is no longer inevitable, computer or no computer.

There is also the embarrassing fact that it is possible for a tie-up to occur not in spite of the computer but because of it. There was the humiliating Armistice Day traffic affair, for instance. A new traffic light was installed on busy University Avenue, at Armoury Street, last October and was hooked into the control system immediately. And for three weeks, until they got the circuit adjusted properly, that light mishandled. It would sit there on green, waiting—just waiting—until a car approached. Then—zap!—it turned red. ‘Sometimes,’ says Tom Hutton, the department’s operations engineer, ‘we even run the same signal for a whole day; it doesn’t occur to us!’

And every few weeks Casa gets a letter from somebody who thinks the computer actually has improved traffic conditions. Casa himself doesn’t think so; he can prove it. He has, for instance, studied the traffic on the University Avenue, Avenue Road and Mount Pleasant Avenue rush-hour routes for the first and last days of the computer operation and the year after. On those major routes, average speeds 1.8 miles, 31.6 miles by traffic department cars showed that the computer was cutting running time by 28 per cent, and reducing the number of ‘two-light stops’ (i.e. for congestion and red lights) by about 55 per cent. But perhaps the most telling about the computer’s effect on the accident rate: it went down by 16 per cent on the same routes studied. It is a commonplace of psychology that delay can make a motorist so frustrated and impatient that he will take risks that lead to accidents. The moral: By speeding up the delays and you reduce the number of accidents. What’s more, in the time that elapsed during tests, the traffic volume increased by 8.2 per cent. Which indicates that if the traffic volume had grown without the computer, the system would have been overcrowded by about 20 per cent. This will have roughly the same effect as the city would get by adding two lanes. It is a very small increase, but without the computer that extra road would have increased the gaging cost and dislocation of private property that road-widening would entail.

Meanwhile, the computer company has released 30 police from point duty, for work on other traffic assignments. The computer really is not easily impressed by such figures.

‘Every driver has an idea of what normal is—1.5 miles,’ says Casa, ‘but the computer gives you a new idea of what normal is and starts looking for an improvement on it.’

But with or without public acclaim, Casa and his department take satisfaction from any improvement they can make in the traffic situation. Tom Hutton is of the opinion that some day the traffic light will cost the average driver 50 cents a day in time, gasoline, depreciation, insurance and so on. That will have to be cut.

In Toronto, that amounts to $113 million a year. Meanwhile, the city’s 25,000 accidents a year take about 120 lives, cause injuries to 9,000 people, and cost $81 million. So even if the computer fails for some reason, it will still have cut costs for something which is one reason they find it so hard to win over the critics.

Goodwin Sinclair, the broadcaster, was one early faultfinder. He’s changed his mind now and credits the computer with getting his house faster, and stopping by one stage: it thought it was more bene than harm. The first time he complained, he said: ‘I’ll never do things as fast again,’ which is not unusual. Sinclair got 200 letters and asked his editor about the computer. ‘You’re way off,' said his editor. 'You’re right, but old Sinclair had tried to get across in this letter—that was the computer, not that he had been hooked up to the computer.

Climbing his pets, computer operator Bill McCallum looks up from his work. For the UNIVAC report is not working properly
Azerbaijan didn't know what it was starting away back there in 1919. Of course, in those days, nobody really knew what the world would be like in the next half-century. But maybe Azerbaijan guessed about one thing that would make a difference—at least to Azerbaijan—and decided to commemorate it somehow.

That one thing was oil.

And the way Azerbaijan, a Soviet republic north of Iran, celebrated it was by issuing a postage stamp that had oil as its subject—the first oil stamp in history. Only a stamp collector would remember an Azerbaijani commemorative today, but nobody—especially the world's stamp designers—has forgotten oil. Up to 1966, when the last compulsion was made, 413 stamps commemorating oil had been issued by most major countries and even a few that you never hear of anymore, like the Transcaucasian Federated Republics.

Romania has issued the most, 88, and Venezuela, another oil-blessed country, has 79. But the United States, which is hardly oil-poor, commemorated the oil industry with only two stamps, and Canada is only slightly ahead: it has had two directly related to oil, and one that deals with it indirectly.

The best-known American oil stamp is the four-cent brown of 1959 marking the centenary of that country's first oil well at Titusville, Pa. Canada had a jump on the United States in both the first commercial oil well and the first oil centenary stamp. James M. Williams of Hamilton dug the first successful oil well on the continent at Oil Springs, Ont., in 1858, so our centenary stamp beat the Americans by a year. The other Canadian stamps connected with oil are the 1955 five-cent blue observing the 50th anniversary of Saskatchewan and Alberta, with three oil derricks to symbolize Alberta; and the 1950 five-cent green that depicted oil as an important Canadian resource. The 1955 stamp doesn't concentrate on oil alone (the derricks share the inch of space with wheat and a pioneer couple) but it's counted as an oil topical. The second stamp is all oil; its scene, probably a composite drawn from several photographs, includes a well blowing that looks like a picture of Imperial Oil's Leduc No. 1 coming in 19 years ago.

Of Canada's three oil stamps, the one that best summarizes the progress of the oil industry is that 1958 five-cent centenary. It isn't as well-known to the public as, say, the 1939 Canadian Sea- way stamps with the mistakenly inverted centre (a block of six of these sells for $15,000; the oil stamp won't get you more than 10 cents) but it has the same designer. He's Al Pollock, art director for Southam Specialized Marketing Services (a Toronto company that, among other things, prints the Reader) and an artist who draws postage stamps in his spare time. He was one of two Canadians and three Americans who designed the Seaway stamp that got hosed up in the printing, and he'd like to forget about it, if you don't mind.

Pollock has designed nine other Canadian and United Nations stamps, and he's the only stamp designer mentioned in The Encyclopedia Canadensis. A Scot with a lifetime in commercial art, Pollock came to Canada in 1950 and promptly entered the first Canadian competition of postage stamp design ever held by the Post Office. Before then, some chap working for a stamp manufacturer would whip up a design usually borrowed from a photograph or two and probably embower it here- clearly. The magazine Canadian Art has called this kind of work 'fantastic scrollwork and meaningless ornamentation.' The same magazine pointed to Al Pollock's first stamp—a 1950 20-cent honouring forest products—as an example of the uncultured look that's gradually helping to lick the artistic horrors of the old Canadian postage stamp. He was given further commis- sions and in 1958 the Post Office asked him to do the oil stamp.

It took him about 2½ months, working nights and weekends. He worked on several designs, drawing the stamps in black and white and tones of grey on sheets four by six inches, and submitted two of them to the Post Office. Stamp-designing is difficult, he admits. "The task that you have to work in such a small area means that you have to eliminate every non-essential." And the average fee for a design is about $40. "On some subjects, the time spent is worth far more than the money received. But you're working perhaps more for the honor than for the money."

The honor counts officially and unofficially. He designed a meteorological stamp for the United Nations that the U.N. postal administrator called "one of our best issues." A block of that same stamp arrived at Pollock's home soon after with a request that he autograph it. The accompanying letter was signed by actor Yul Brynner.

Did Al Pollock have any interest in stamps before he began designing them? "No," he says. "I just design them."
Jack Lennox stepped forward for the introduction.

"Meet The Monster," said the dispatcher. "Monster, this here's Jack Lennox. He'll be working with you next shift."

Green and amber buttons flashed on The Monster's facade.

"Never met a control panel I didn't like," said Lennox politely, and sat down at a desk a few feet from The Monster. The Monster is the new $150,000 control panel in Imperial's pipeline dispatch office at Waterdown, seven miles north of Hamilton, and this was Lennox's first shift with it. With its 32 screens and 300 push buttons, The Monster is the last word in control panels for oil products pipelines. With
More Things to More People

More than 15,000 miles of pipeline zigzag across Canada, carrying everything from crude oil and natural gas to experimental loads of wood chips,nickel ore and even wheat. But of the four oil-products pipelines, none delivers more to more people than Imperial's Sarnia Products Pipe Line, stretching east from Sarnia to Toronto through 188 miles of the most populated area in Canada. Close to five million people—almost one-quarter of Canada's population—live in the areas served by the 12-inch pipeline and by the vehicles that carry its products to hundreds of miles off the pipeline. Every Imperial customer between Sarnia and Brockville who heats a home, cleans a floor, drives a car or truck, runs a factory or office building, or takes a jet from Toronto International Airport, has used some of the 11 liquid products delivered by the average 60,000 barrels per pipeline day to steel storage tanks along its route. But because the line wasn't tied in to all pumps and valves, it needed manual help from several operators posted along the line at strategic points. Enter The Monster, designed to convey the goodies with only one man to watch his array of buttons.

Lennox is a buxom, solemn man of 48 with a somewhat deadpan expression. Nothing ruffles him, an admirable quality in a pipeline dispatcher. And since 1932, when Imperial opened its first products pipeline, Lennox had been a dispatcher on the old control panel, co-ordinating the activities of his co-workers along the line from Sarnia to Toronto. ‘It will be a little lonely, I suppose,’ he said, glancing at his new surroundings. ‘When things were slow before, we used to pass the time of day on the telephone. But this new panel doesn't need a telephone because there's no one to send instructions to. Me and this thing control just about everything.’

He gestured at ‘The Monster, a machine a little less than seven feet tall and not much more than three strides across. A trim metal cabinet, the color of an urn, has banana just capitalizing into yellow, exudes the tangle of wires, coils, capacitors and transistors. On the control face, buttons flash green and amber and square beam reddish-yellow light, small electronic devices, explaining to the experienced eye what is happening inside the steel pipeline which passes about 400 yards south on its way to Toronto.

‘If you don’t know what it’s all about, I guess the whole thing looks forbidding,’ Lennox admitted. ‘But actually, it’s like anything else—all you need is experience.’

The line, he explained, is always filled to capacity with 139,000 barrels of products flowing from Sarnia to Toronto and take-off points between. They move through the line in batches, one after the other, pulled along by 900-horsepower pumps at Sarnia and (when more speed’s needed) seven other pump stations located along the line from Woodford to Watertown. Most flows to the big markets around Toronto, but take-offs along the line at Woodford, London, Woodstock, St. George, Waterford and Hamilton have oil products.

At the moment, Lennox observed, all was in order. At Sarnia, the last of half an 80,000-barrel batch of Enso gasoline was pouring into the line, going east at about three miles an hour towards Toronto. Its head already extended about 45 miles east of Sarnia, where it lapped at the heels of about a half-mile’s worth of heavy naphtha, 15,000 barrels of diesel fuel, which had already decanted 170 barrels at Watford and 80,000 at London, followed by nearly 40,000 barrels of naphtha, following right behind a 40,000-barrel batch of furnace fuel. The furnace fuel was just coming up into Watertown, where 10,000 barrels of it would be tapped for Hamilton. The rest of the line to the east was filled with light industrial fuel now pouring into storage tanks in Toronto.

‘Fine and good,’ said Lennox, staring at the panel screens which recorded vital information like gravity, flow rate, and suction and discharge pressures. Rapport between man and The Monster spiced the atmosphere in the dispatcher office.

Prescribing what goes in, and when, is no job-less-a-button-and-see-what-happens affair. Marketers work closely with Sarnia refinery to determine just what will be needed weeks in advance. Traffic’s heavy in the winter, when fuel demand raises deliveries to as much as 80,000 barrels a day. In the summer, the action slows to as low as 40,000.

When Lennox comes in for work, his instructions await him in a neat pile on his desk. He transfers the orders to ‘The Monster by poking the appropriate button at the right time. The Monster, connected by telephone line to all pumps and other control devices, and almost all storage tanks and product measuring devices, changes the pressure of the dispatch valve to an electronic impulse. The impulse shoots along a telephone line to its destination, where it opens a valve, closes a valve, or holds any other order Lennox passes along. To corroborate, the button lights up in green or red for closed, amber for open to show the dispatcher the mission is accomplished. If Lennox wants the pumps to move faster, he gives the three Sarnia pumps a call, he presses a button for any of the other seven stations in his portfolio to set in action. Full speed ahead is about five miles an hour. Any slower than one mile an hour and the batches will mix with each other.

Plugs in the Pipeline

As it is, batches overlap a little as they flow along. That’s why scheduling the products in the right sequence is so important. To keep gasolines and heating oils separated in the pipeline, the flowing pumps and valves employ a gasplug. It’s a special naphtha, compatible with either gasoline or heating oil, which acts as a buffer between two different products.

In moving oil products you deal in minimums and maximums. ‘It’s not just a matter of pressing buttons to make things happen,’ said Lennox. ‘Some things don’t happen when you press the button and something happens. Pump won’t work. Valve won’t open. You’re standing there with one embarrassed thumb. That’s why you’ll always need men around. A panel never knows what to do in a pinch. It’s up to you to stand up along with a good dispatcher.’

If buttons don’t obey his bidding, Lennox talks to the hot line to a Bell Telephone technician. The technician pinpoints the trouble and, if it’s in the wire lines—he’s the one who talks to a source other than his lines, like the time someone in Sarnia accidentally switched off the current leading to a storage tank valve. Either way Lennox has to decide just what to do with a control panel that’s got the hot line out for a half-hour, there’s no problem. But out for a few hours means he has to decide whether to shut down. If worse product absolutely has to be let out at some take-off line at a specific point in the product’s progress, it’s all downhill. Lennox gets on the phone with orders to people at either end of the pipeline to seal it temporarily.

And now talk about shutdowns gets Lennox depressed. Especially so now that the furnace fuel was flowing past Waterford’s, and it was just a matter of 10,000 barrels into a spur line leading south to Hamilton. As a rule dispatchers always wait until a few seconds after they’ve sent the signal to have flow past the spur line—just to be sure that when they open the valve things are in order. Another bit of fine surprise waiting. It’s never happened—getting one product when you expected another. But it remains a dispatch nightmare. Lennox circled in front of The Monster, picked out the correct buttons, pulled the right control panels, and when Lennox watched the expected flash of the amber light and then he stepped back, nattered.

‘No hot line this time,’ he said. ‘Hamilton gets its furnace fuel right on time again.’

Not that Hamilton has never gotten its furnace fuel on time. But until 1952, Imperial had to get its Sarnia-refined products to market by tanker and railway tank car. They got where they were going by the mercy of ice on the lakes or freak snowstorms ruinning precise railway delivery schedule the planning behind the weather. It lies there under feet of ice, oblivious to incidency. All the way to the station at 12 inches in diameter from Sarnia to Toronto.

Imperial’s Sarnia-Toronto line hasn’t known a dry day since it opened in November, 1952. It started with a 35- mile test run at 20 miles an hour, capacity, jumped to 85,000 barrels when the company added pump power and another 38 miles of line in mid-1953. The products pipeline runs parallel to the old line from Watertown to Toronto.

Despite The Monster’s arrival, the line isn’t entirely remote-controlled. Humans other than a dispatcher are still on duty along its length. And on foot, keeping the line in good shape and standing ready to carry out manually any tasks The Monster might boggle.

‘It’s nice to have a control panel doing the work,’ said Jack Lennox. ‘But it can’t make me a good man as my ace in the hole every time.’

A look-flying plane makes a regular inspection of the 198-mile products pipeline that The Monster and Jack Lennox run.
Expo 67's Jacques Belanger has got to find rooms for all that many visitors by next summer

by Gerald Taffee

photographs: Al Schenhorn

"If you are faced with the prospect of having 10 million visitors looking for a place to stay, the man to call on for help is Jacques Belanger. Right now, Jacques Belanger is trying to find a place to sleep for a crowd that's half as big as the entire population of the whole country. They're all going to Montreal for Expo 67, and Belanger is the man who's finding places for them to stay.

How? Well, first of all, he's counting on relatives and friends living in and around Montreal to look after four million of them. For the other six million he's counting up hotel rooms, motel rooms, tourist courts, apartment houses, rooming houses, dormitories, trailer courts, camping sites, country inns, and people with spare bedrooms. If a cruise ship docks at Montreal, Belanger may even start counting the staterooms on board, just in case.

"If all we had to offer were the commercial inns," Belanger says, "we'd lose a week counting the rooms like that.

Jacques Belanger is a 35-year-old ex-hockey player and coach who got into the hotel business 10 years ago. He ran a small hotel in the Laurentians for two years, went to the 121-room Queen Elizabeth hotel as one of the assistant managers in 1958, and by 1964 — the year he joined Expo's staff — was managing the Jamaica Hilton, in Ochoa Rios. Nelson Vermette, Hilton's head in Canada, and Belanger's boss, calls him "a natural for the hotel business... an outgoing, sales-minded guy.

Actually, Jacques Belanger is a smooth team man. He has a reassuring presence, with the bone-chilling look of the one-time athlete, a little like Gordie Howe. His manner is unflappable. If a problem comes up, he listens patiently and thinks a while before suggesting an answer. He is also self-effacing: when he talks about his work he hardly ever refers to himself — instead it's "we did this" or "we arranged that.

Belanger's team spirit goes back to the Forties and Fifties, when he had a reputation as a player and coach in junior hockey. 'I always thought Jacques could have made it in the pro league,' says David Mohoss, president of the Montreal Canadiens, who played with Belanger on the Junior Royals. 'He was a solid, hard-working player, very good in the corners. I'd compare him to Claude Provost.' Sam Pollock, the Canadiens' general manager, remembers Belanger as a 'gentlemanly' coach in the junior leagues, 'the kind of guy any parent would be glad to have his kid play under.

Belanger is still athletic. Every Monday night in winter he meets with other former junior league players at the outdoor rink of Montreal's Lower Canada College. 'We play what they call the Old Boy Hockey,' he says. 'That means there's no tough checking.' Belanger. He also coaches midget and pee wee hockey — and he's out on the ski slopes of the Laurentians every chance he gets. In summer he plays baseball with a bunch of contemporaries in what they call the 'Slow Pitch League,' golf twice a week and water-ski's a little.

Belanger manages to sandwich all this sports activity into a work schedule that can begin with a staff conference at 8:30 in the morning and end only at midnight, with the drive home from a dinner talk to, say, the Plattsburg, N.Y., Kiwanis. He gives such talks maybe twice a week.

Days, he quietly co-ordinates Expo's needs with government officials, with commercial innkeepers and with travel agencies. He canvases private houses, apartment buildings and institutions. His job is to find accommodation for an estimated 100,000 visitors a day during Expo's peak months of July and August. When that time comes he will also have to direct the visitors to their lodgings.

The size of Belanger's task became clear in 1964 when Expo sent a detailed questionnaire to every operator of a hotel, motel or rooming house within a hundred miles of Montreal. 'The first thing we found out,' Belanger says, 'was that there wasn't enough room in the commercial inns.' From the answers, Expo discovered there were 27,233 rooms available in the area. The forecasts were made for 55,368 rooms a day during Expo's peak months.

And Belanger couldn't simply go out and find the extra rooms in private homes. The Quebec Hotel Act has already been changed by the day to licensed hotelkeepers. In 1965, Expo asked the provincial government for authority to use the rooms available in private homes, apartment buildings, and colleges. Belanger got his permission last April and Expo now holds the exclusive right to non-commercial lodging permits during the exhibition. But even before the necessary legislation was passed Expo had begun to dig up lodging in private residences. By February Belanger had the names of 2,000 people who were willing to rent rooms to Expo visitors, just as he began to make enquiries about space in apartment buildings, a box company rented an entire high-rise apartment building that will be completed in time for Expo. The company's package tours of Expo will include accommodation.

But Expo has responsibilities as well as privileges. Before issuing lodging permits, therefore, inspectors examine the rooms offered. One of their duties is to make sure that the temporary innkeepers know what to expect from the public. 'We tell them that there can be no discrimination on the grounds of race, color or creed,' says Belanger, 'and that the guests should be able to come and go as they please. In other words, that the same rules apply as in the hotels.

As indication that Belanger had started lining up the rooms, none too soon came last April when the Queen Elizabeth hotel announced that it was booked solid for the period of Expo. Rene Escheniller, president of the Montreal Hotel Association, reported that there were still hotel rooms available last May, 'but we can't say what the situation will be a few months from now.

Doubling the number of rooms available in a city the size of Montreal may be a tough job, but Belanger and Expo face a tougher one — they have to
No spare bedroom is overlooked. Belanger has found many hosts in private residences.

Any More Questions?
If your younger ever approaches you hesitantly and asks where things like paint and pancake makeup, tiles and tins come from, here’s your answer.

Well, according to the first census of the Canadian petrochemical industry taken by the magazine, Canadian Petroleum, many of them originate with Imperial, which has 12 petrochemical plants producing or planned. Next is Dow Chemical Company with 11 and then British American Oil Company and Shell Canada Limited with eight apiece. Okay?

How Now...
Holey cow! They’ve got a pot-hole in the side of a cow! The University of New Hampshire’s research nutritionists went to the United States Navy when they wanted to study the digestive activity of the cow’s rumen, the first of its four stomachs. The Navy designed a tube, about six inches around and made of an oil derivative, polyethylene naphthalate. They inserted it in the Holstein and sealed it with a silicone elastomer. A threaded disc can be painlessly screwed out of the tube to take samples. The cow is contented. She gives 25 to 30 quarts of milk a day and is the mother of a perfectly healthy heifer.

Suntanned Dolls
Pretty soon you won’t be able to buy a doll; you’ll have to adopt it. There are dolls that bawl, wet their diapers, walk, talk, sing and even help with the household chores.

Fold-Up Sofa
Swoon the lady’s man who’s transferred to another city may take his furniture with him—in a single trunk. There’s an inflatable sofa being manufactured now, made of a fabric coated with vinyl, which is derived from ethylene. It can be adjusted to the sitter’s satisfaction: pull the plug for softness, blow in some air to straighten the creases. But watch out for hant pins.

Skin Game
First it was wine bottles, now it’s wine skis they’re making of plastic. The British have produced a wine skin made of plastic laminates, and one company already is selling wine in the synthetic skins. They may not be real great skin anymore, but you can still uncork their caps, open your mouth and savor. And imagine...

Flameless Passion
Sweethearts of the year 2000 may have trouble performing that traditional act of devotion—burning all their old love letters. The letters just might not burn. A Japanese company has set up a pilot plant to produce a new kind of plastic paper, made by splitting plastic film. It’s said to be waterproof (it won’t record the lovers’ tearstains) lighter than natural paper (more letters can be stored in the attic) and non-flammable (only the words of love themselves will search the paper).