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# CANADA

# Canada

Volume 8 No. 2

March-April, 1974



*COVER: Fishing through a hole in the ice is still in season as this issue goes to press. That's not a bad catch of northern pike for a small boy. More energetic winter pastimes are described in the following pages.*

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ACKNOWLEDGMENTS: 'The cost of Winter' is adapted from an article by Marie-Thérèse Ribeyron in the French Canadian magazine *Le Maclean*. 'Canada and the Energy Crisis' is based on an article by John Aitken in *Maclean's*.

'New Window on the Heavens' originally appeared in the National Research Council's journal *Science Dimension*. 'All in the Games' is reproduced by courtesy of *Weekend Magazine* Copyright 1974. All rights reserved.

The Newsletter item about Fernie, British Columbia, was written by Reg Vickers for *The Globe and Mail*.

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Most of the major business houses in India were represented at the inauguration of the Indo-Canadian Trade Group in Bombay on 11 January. A sizable Canadian contingent was headed by the High Commissioner, Bruce Williams. The Indo-Canadian Trade Group was formed to promote and strengthen Canadian contacts with the substantial commercial communities in the major Indian cities. The Canadian delegation to the Indo-Canadian Economic Consultation in New Delhi last November had expressed the hope that India would import more from Canada on a commercial basis. Although 75% by value of India's imports are canalized through state trading organizations, private sectors companies continue to import machinery and equipment direct. The Indo-Canadian Trade Group will facilitate this trade. The Canadian government hopes there will also be more investment by Indian companies in Canada on the lines of the Indian hardboard venture in Nova Scotia. The formation of the trade group was the suggestion of the Indian Council of Foreign Trade. The group plans to hold several seminars on trade and investment this year. The inaugural meeting chose S.P. Mandelia, Managing Director of Century Rayons, as the first chairman of the trade group, G.R. Jolly, Chairman and Managing Director of Anil Hardboards, as Vice-Chairman, and A.T. Eyton, Counsellor (Development and Commercial) in the High Commission, as the Canadian member.



Jaipur and Calgary have been declared twin cities. A bond of sentiment between the Pink City and the Stampede capital was sanctified at a meeting of prominent Jaipur citizens on 11 December, 1973, on receipt of notice of a reciprocal move by the Calgary City Council. A resolution adopted by the Jaipur Municipal Council on 1 December said in part: "We have great pleasure in declaring Jaipur as a World City and offering our hands of friendship to the City of Calgary as our Twin City. . . ." The resolution continued: "We the people of the world cities of Jaipur and of Calgary, Alberta, Canada, agree to . . . practice tolerance and live together in peace with one another as good neighbours . . . and we resolve to combine our efforts to accomplish these aims by Declaring our cities portions of world territory linked to the community of man, that is, mundialisied, Promoting greater support for the United Nations Organization, Uniting our cities in friendly co-operation; that is, forming a twin association between them." The resolution was read out in English and Hindi at the Jaipur citizens' meeting and copies were presented to the chief guest, Speaker R.K. Vyas of the Rajasthan State Assembly, and to a representative of the Canadian High Commission, New Delhi. Twinning the Alberta oil city with the historic Rajput capital was the idea of Dr. T.K.N. Unnithan of the University of Rajasthan, who was lately visiting professor of sociology at the University of Calgary.



Four of the Canadian hardrock miners participating in the Khetri Copper Project training program pictured on pages 10-11 want to bring their families out to India. They returned to Canada on completing their initial six-month stint but it is understood they may be given a chance to come back with their wives and children at a later stage. The Canadians were charmed by scenic Rajasthan, old Khetri town presided over by

*Continued on page 18*

# the COST of WINTER

by MARIE-THERESE RIBEYRON

**Y**OU pay for winter in Canada—dearly. All the more reason to like it.

All the more because it is as unavoidable as it is punctual. Since Jacques-Cartier (1534), we give the impression of being regularly taken by surprise. But winter hasn't missed one appointment in 439 years!

Fortunately we've got used to it. Facing winter is no longer, as it was in those days, a question of technology, but a question of expense. Snug and cosy in the micro-climate of our homes automatically maintained at 72° Fahrenheit, we wake up in the morning in a warm room. No more, the teeth-chattering rush to replenish the logs in the furnace. And it's no longer the smoke curling skywards that tells us what the temperature is, but the cheerful radio voice ushering in the day.

If we venture out, we are protected by synthetic fibres as light as they are warm. We travel comfortably in heated cars on roads cleared by the snowplough. We can even feast on strawberries in mid-January—at four times the regular price.

The preparations of the fall, the rites of winter—putting up the double windows, adding antifreeze to the car radiator, fitting snow tires, covering the shrubs with sacking, getting the furnace oil tank filled—they're part of our folklore.

But our defences against winter cost plenty. Here's the bill of an average Canadian father of three: \$500 for warm clothes, \$100 for snow tires, \$100 for protective undercoating, \$100 for the car accessories, not counting bent windshield wipers etc. And \$275 for heating the house, not

counting the \$6,000 that must be added to the building cost for protection against cold, snow etc.: strengthening of the roof, double windows, insulation and furnace. According to one architect, Pierre Campeau, this supplementary outlay of \$6,000 is roughly constant, whatever the price of the house. That means a quarter of the total cost of a typical \$24,000 bungalow. And winter, as Campeau points out, accelerates the depreciation of our homes and adds to maintenance costs. One need only add that investment in outdoor living space, terraces, balconies and gardens pays dividends only four months in the year.

Having spent so much just to avoid suffering there is all the more reason to try and enjoy the season. In many parts, people converge on the snows, whether horizontal or sloping. There are half-a-million skidoo fans in Quebec alone, even more skiers and tens of thousands of snowshoe trekkers.

All these pastimes have to be paid for: \$75 for the youngster's hockey gear, \$40 for the two girls' skates, \$1,000 for the snowmobile, \$150 for skidoo suits. Resort skiing costs nearly as much as snowmobiling. The wise prefer to pay less for their pleasures and opt for snowshoeing and cross-country skiing. Even then, our average family spends a good \$1,300 on winter fun.

That's when they've already forked out on bicycles, a trailer, a tent, an outboard motor, a boat, fishing tackle. . . . Since we live in two countries, not one, we could use two incomes. Maybe that explains the working wife: one income for summer, one for winter.

**T**HE spending doesn't stop there. Equipment and social services are more expensive in the snow belt. Montreal city alone burns 4 million gallons of furnace oil a year to heat its buildings. I will spare you the figure for all the public buildings in Canada, provincial, federal and municipal. One could almost lay the "energy crisis" at the door of winter if the Arctic Institute had not established that the consumption of power by airconditioners in the South about equals the fuel costs of keeping warm in the North.

Then. . . taxes! The Quebec Highways Department, for example, keeps 15,000 miles of roads clear at a cost of \$20 million. It takes \$40 million worth of heavy equipment plus 620,000 tons of defrosting salt, which incidentally destroys the half-a-million gallons of paint they used to mark the traffic lanes the summer before! And the roads thus cleared are more susceptible to frost damage than others. Not to mention the wear caused by tire chains and corrosion by the salt.

So down with winter, eh? Not necessarily. The Arctic Institute's report of 1969 concluded that we have the technology required to reduce the cost of winter. It is our habits and our way of life which cost the money. For instance, snowstorms only interrupt man's routine because we have placed a geographical divide between work and sleep: dormitory towns this side, industrial and commercial zones that side. This topographical division of life doesn't go with winter. We borrowed it from the great Californian cities, the car and bungalow civilisation. But are we going to change it now? Probably not.



But two other recommendations the report made are beginning to take effect: one, "glassed-in arcades and underground shops". The subterranean warrens in downtown Montreal and the big shopping centres in the suburbs are concrete applications of these principles. Two, "commercial exploitation of the possibilities snow offers". Ski resorts and the skidoo industry are just that.

As to the final recommendation, "reduce direct costs by using waste heating and by more efficient snow-clearing", it is worth thinking about. Specifically, the report recommends studded tires for all vehicles, as has been adopted by most drivers in Finland. Cars no longer skid all over the place, gravel and salt are no longer needed and a thin layer of snow is allowed to remain on the road, minimising corrosion damage.

A final suggestion out of the report: Adapt our cars to the climate, give them front-wheel drive, bigger wheels, diesel power plants, maybe even a hovercraft-type air cushion. In the last case, we should no longer need highways at all, even in summer. Such economies!

One thing is sure, the final battle in our war against winter is yet to be fought. The difference between the snows of yesteryear and today's is that we pay in money where our grandfathers paid in sweat and man-hours.

It's remarkable that our history books scarcely mention this war. For three centuries, the colonial's life was an unremitting hand-to-hand fight with the cold. This struggle against the frost that renders things iron-hard, against the ice that locks up water and land, against the snow that buries has been well described in a classic called *Man and Winter in Canada* written by a great geographer, Pierre Deffontaines.

Imagine a battalion of settlers disembarking under the torrid sun of our July, then later marvelling at the mildness of the fall and of an Indian summer reminiscent of August back home. Could they have been expected to foresee what was in store for them?

Without notice, they found themselves engulfed by one of the hardest winters on earth. Montreal is colder than Scandinavia. Even the coast of Norway doesn't get this icepack that

lays siege to the Gulf of St Lawrence. Montreal gets an average of nine feet of snow every winter and sometimes as much as twelve.

Those first winters in Canada, people died. Of cold, of hunger, of homesickness. It took several years to design a house capable of withstanding the climate. "For the first two centuries," says Deffontaines, "Canadian houses were affairs of stone, damp, chills and rheumatism."

It was the invention of the closed stove, which keeps the fire in, that allowed house-builders to switch from stone to wood construction, incorporating airtight double walls, a solid roof and raised foundations insulating the house from the ground. Before the coming of the stove, the open hearth would have incinerated these dry, comfortable homes.

"Home became the centre of the world," wrote Louis Hémon, "the frail fortress where one could hold out against the assault of winter."

The peasant now has his shelter, but he is no less a slave to it. He has to lay in a mountain of logs against the cold. The timber reserves determine his pattern of land development. "The business of keeping warm was a crushing burden," says Pierre Deffontaines, "a work horizon without respite for the settler."

It was hard to maintain and feed animals in winter. So animal slaughter would be timed for the start of the cold weather, which allowed you to lay in enough meat, especially pork products, for Christmas feasting. Hunting and fishing assumed great importance. Fortunately pork lends itself to marinating, salting and smoking. Vegetables are a bit more of a problem, but they were stored along with preserves made from the fruits of summer and fall. Sugar, a great preservative, got added to everything.

It wasn't enough to house and feed yourself, you had to have clothes too. A whole wardrobe had to be devised, usually after the Indian model. Textile imports were scanty and there was little sheep breeding. People turned to the furry animals for the hides to make cloaks, mufflers, bonnets and boots. While the men prepared the leather and the fur, the women patched and repatched garments which had to serve indefinitely.



*Winter games (1): Water, water everywhere. Played by pedestrians whenever the snow melts. Object: not to step in deeper than the top of your boots.*

"Women's work was a vital element in the struggle against the cold," says Deffontaines, "to the point where sometimes a man married to assure himself of warm clothes. A proverb has it: Man without woman cannot take the winter."

Winter had determined the architecture: it also determined town planning. To minimise snowclearing and avoid isolation, they built their houses at the very edge of the road, as close together as possible. They kept to a minimum the exposure to the land stretching away behind the

house. The result was terraced housing, which proved inadequate to a prolific population and gave rise to largescale migrations.

ALL these efforts, all this energy, might otherwise have been put to better use. Some historians blame the winter in part for Canada's slow economic development compared with the United States. Probably with some justice, although the Arctic Institute's report observes that there is no direct connection between the cold and economic development.



*Winter games (2): Bury my neighbour. Played by motorists after snowstorms. Object: to dig out before the other fellow.*

But it is careful to add that development is related to the density of population, which varies inversely with the rigour of the winter. Migration, winter isolation, the annual six-month blockade, certainly didn't serve to stimulate economic growth.

Today, this isolation is gone. Not only do the lines of communication by land, sea and air remain open through the winter, but the pre-existing isolation favoured the development of telecommunications. In 1971, only the United States and Sweden had more telephones per capita than Canada, which has nearly one for every two Canadians. It is no accident that Canadians, congealed in their terrible winter, are front-runners in the phone call stakes. Champions for 17 years, they have just been edged out by the Americans, but they still manage to make 780 calls a year per capita.

Almost beaten, winter nonetheless continued to levy its toll of misery. In the winter of 1971 unemployment was the lot of nearly one worker in 10, 2 per cent more than in summer. Out of habit we overheat our homes and catch cold when we go out. On average, every worker is away sick

half a day a year on that account. Stuffed with vitamins, curled up in our cosy little lives, we still find the cold season hard to take. "It's the time for nervous depressions," say the psychiatrists. Says Dr Richard Montpetit of the University of Montreal: "The human organism is better equipped to overcome heat than cold." Lacking fur as it does, our body constantly gives off heat. There has to be a constant supply of calories to maintain body temperature. And according to research by Daniel Lafleur of McGill University's climatology department, wind aggravates the climatic strain set up by the cold.

Even psychologically, winter puts a man to the test. "What is difficult is more rich in potential than what is easy," Deffontaines reminds us. "Winter has been one of the factors responsible for the perfection of techniques." It is the idea of challenge, dear to Arnold Toynbee. But physiologically as well, cold encourages activity. "Cold contracts the muscles, improves the body tone," explains Montpetit. A cynic might argue, of course, that it is the cold that drives us to earn enough money to winter in the West Indies!

Winter is the time you remove the chairs from the balcony. It is the time of Christmas and the turn of the year, family reunions, the peak season for Alcoholics Anonymous, for the best in television, which attracts nearly twice as many viewers as in summer.

You pay for winter, so you may as well like it.

And it isn't that bad, even when there's a snowstorm. That only throws us out because it removes us from the Pavlovian world of clocks, because it upsets our civilized time which has nothing to do with cosmic time. Even snowstorms have their points, like the big one in 1970. People went about on snowshoes, on skis, on sleds in the main streets of buried towns. One warmed oneself at the first port of call, and it was open house for everyone. For 48 hours, in the heart of the concrete jungle, we were given a respite that allowed us to return to the slow, warm winter of childhood, where there was nothing to do but wait for spring.

It is nice to cry halt to time. Winter does that for us. □



# CANADA AND THE ENERGY CRISIS

Canada's  
energy problem  
is different:  
there's more  
than the  
country can  
use by itself.

*A pipeline snaking through the Rocky Mountains carries gas to the Vancouver market.*

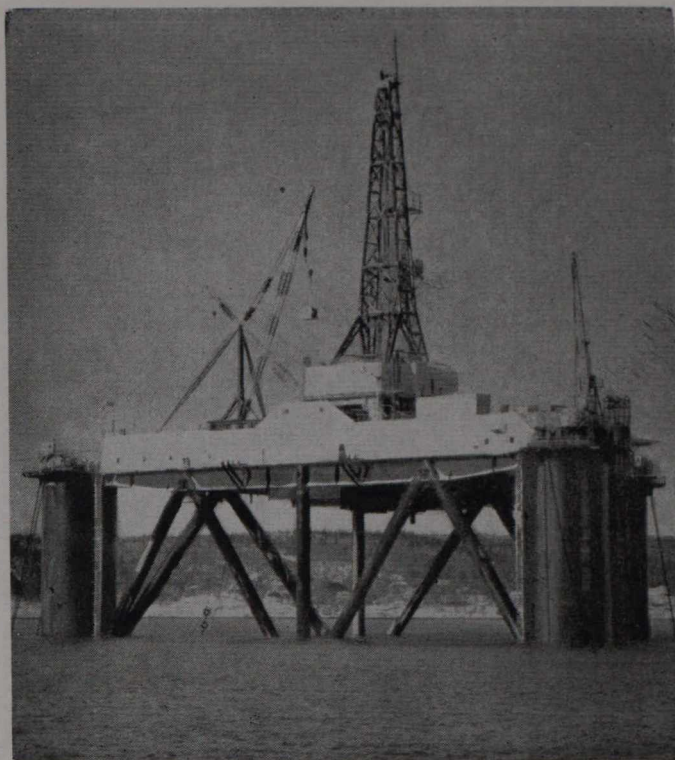
**T**HE ENERGY crisis put Canadians through an emotional trauma this winter. We have been threatened with some of the most difficult economic problems a nation can face in peacetime: gasoline rationing; regional allocation of home heating oils; shortages of thousands of products ranging from home insulation to ball-point pens; massive unemployment and spiralling inflation; even the prospect of shivering in front of living-room fireplaces, for those lucky enough to have them and wood to burn in them. The stock market has sagged and General Motors temporarily shut down an entire car production line in its Oshawa, Ontario, plant. There was talk of economic recession.

Yet Canada's so-called energy crisis, despite very real threats, is in many ways a myth. If oil is in such short supply, how come we're still exporting 1.4 million barrels of it per day to the United States? At the current level of consumption, Canada has enough coal reserves—120 billion short tons—to last us for 3,000 years. In Pickering, Canada has the biggest functioning nuclear power station in the world, producing electricity which is competitive with that from thermal plants. Pickering finally dispelled any remaining doubts about the economic feasibility of the CANDU (Canada Deuterium Uranium) concept. Abundantly endowed with the natural uranium used in CANDU reactors, Canada expects to derive 44 per cent of its electric power from nuclear sources by the year 2000. And Canada has developed only one-third of its hydroelectric potential, which is the second-biggest in the world after Russia's.

Canada's crisis lies in its failure to develop pipeline and refining facilities sufficient to get the vast reserves of oil and natural gas to market. We can't save the Americans from their energy crisis, nor can we even help them very much. Meantime, as a result of our failure to build pipelines and refineries to bring oil east to Quebec and the Atlantic provinces, these provinces will have fuel shortages at least until the early 1980s. The larger part of the blame for this prospect belongs to Canada's geography. Canada sprawls from east to west across a continent where energy and transport economics are north-south oriented.

When the Leduc oil field was discovered in Alberta in 1947, a pipeline was begun to carry oil to the industrial provinces of the east. But the line never got beyond Toronto. Despite the fact that it had to be shipped thousands of miles across the ocean, foreign oil was still cheaper in Quebec and the Atlantic provinces than oil pumped through a pipe. They continued to buy their oil from Venezuela, and Alberta shared its oil between Ontario and the midwestern United States.

As a result of the current oil squeeze, eastern Canada could have found itself short of 200,000 barrels a day, had not the refinery at Come-By-Chance, Newfoundland, offered to divert part of its output from intended US markets. But it will take more than that to solve the long-term problem. Professor F.K. North of Carleton University says even with unlimited funds and technology it will take 10 years to bring Canada's Arctic oil and gas to market. The extension of the Interprovincial Pipeline to Montreal, which is expected to be completed late next year, will only alleviate the shortages in eastern Canada. The oil that is pumped through the pipeline will come from the Alberta oil fields, meaning cancellation of some



*One prospective source of fuel for Canada's Atlantic provinces is offshore oil. Exploration is in progress from drilling rigs like this one.*

contracts with the U.S. But there are refineries and even industries in the midwestern US which were built because of availability of Canadian crude and are dependent on continued Canadian supplies. And the output of the Alberta oil fields has already begun to decline.

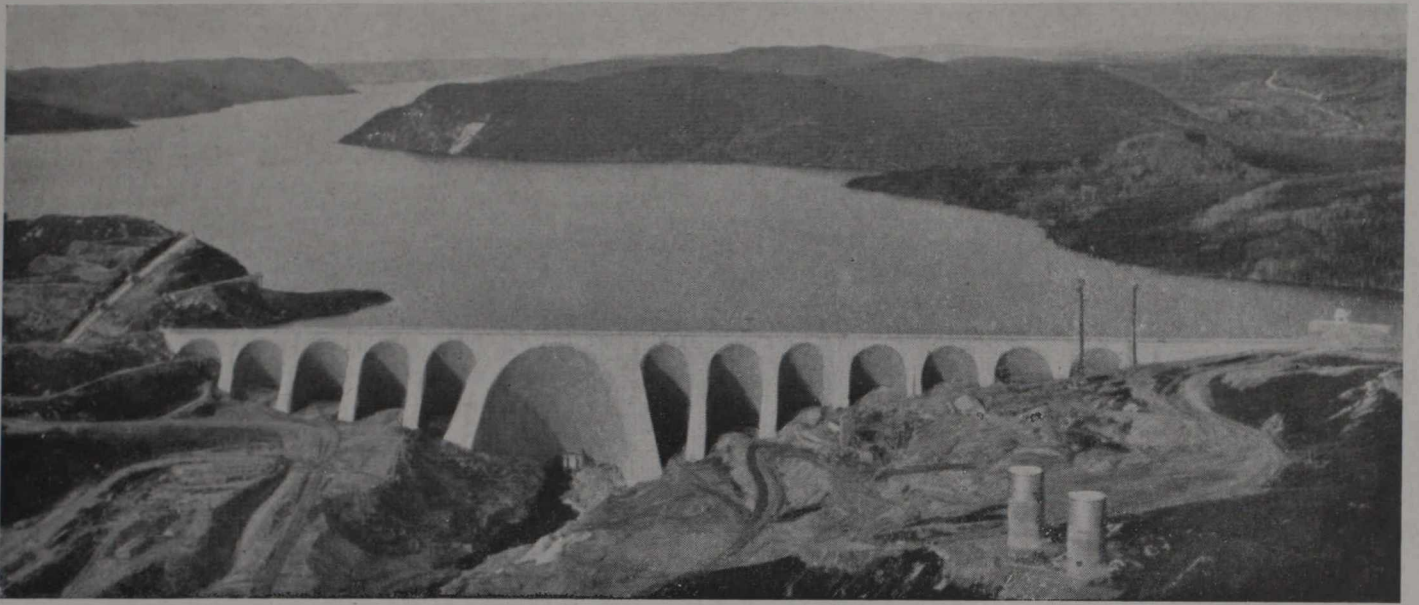
When they dry up we will turn, theoretically, to the Alberta oil sands. But at the maximum they will be producing only 280,000 barrels a day by 1980. Eventually we shall have plenty of oil coming from the sands, but eventually isn't the problem. The problem is now. We don't lack oil, we lack pipelines.

**T**HE problem with natural gas is more difficult still, because while we sell half of our oil to the Americans we do so on the basis of 30-day licences which could be terminated if necessary. We also export half of our natural gas—about 2.8 billion cubic feet per day—but we do so under long-range contracts which extend as far as 1992. Now Canadian Arctic Gas Study Ltd., a consortium of Canadian and American corporations, wants to build a \$5.5 billion pipeline from the Mackenzie Delta, 100 miles north of the Arctic Circle, to bring Arctic gas south for American and Canadian consumption. The main argument for building the pipeline is that we need the gas and we need the American market to get a sufficiently high volume of gas to make the project economically feasible.

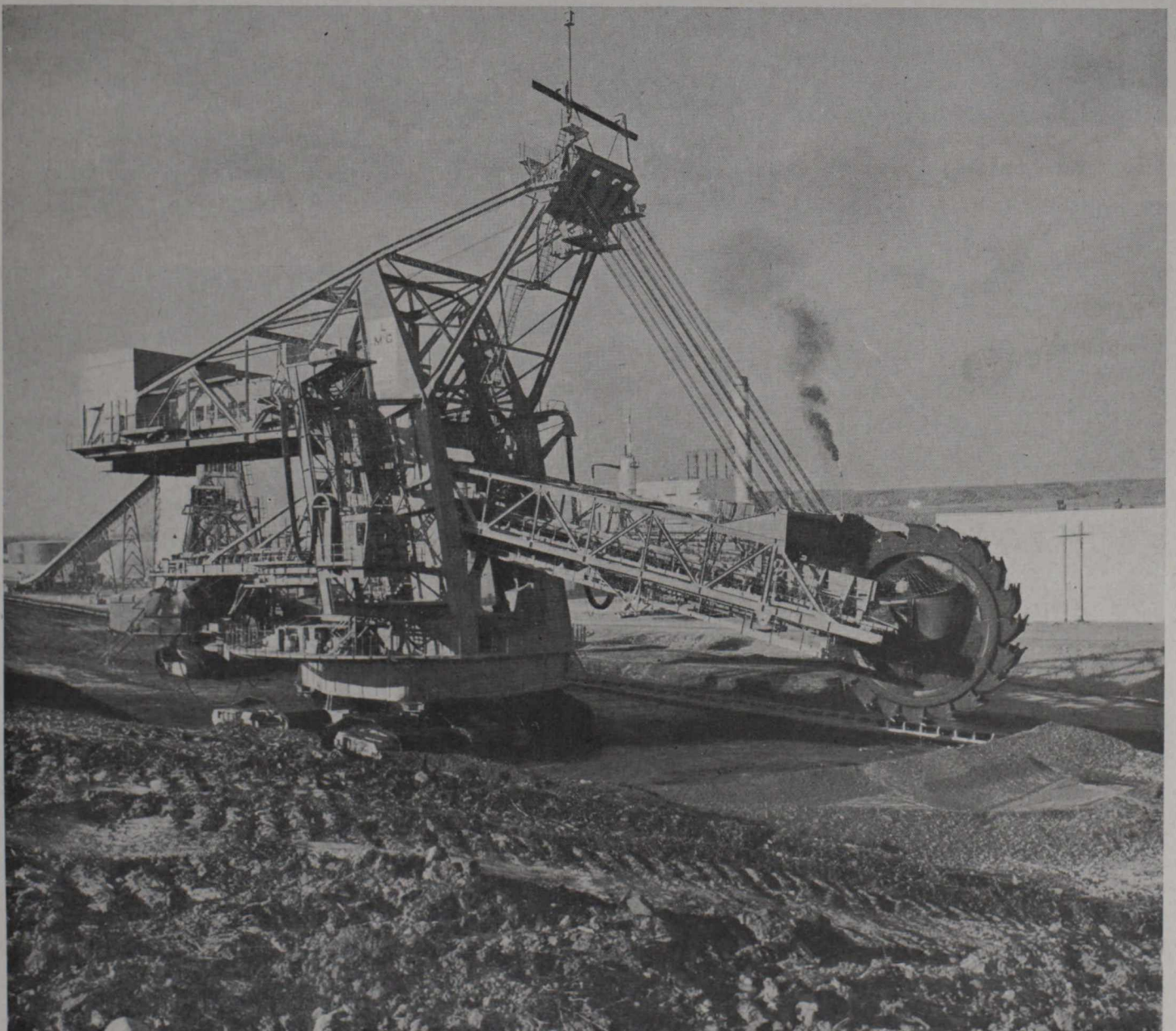
Both oil and natural gas can be used either as fuel or as feed stock for petrochemical industries. The province of Alberta wants the federal government to let it sell off its remaining seven billion barrels of conventional oil reserves to finance a petrochemical industry. Alberta's Premier Peter Lougheed knows that when conventional oil sources are exhausted the tar sands will keep the province in the fuel

*Continued on page 17*





*Manic 5, the world's biggest multiple arch structure, is part of a system of dams and powerhouses harnessing Quebec's Manicouagan and Outardes rivers. The seven powerhouses will produce 5,500 megawatts of electricity which will be transmitted through 735,000-volt power lines. Below, an excavator tackles the tar sands at Fort McMurray, Alberta.*





# KHETRI:

nine Canadian  
hardrock  
miners are  
sharing  
technology at  
the dirty hands  
level

*Cigar-chomping Jan Gortzak (picture top left) came 8,000 miles from the nickel town, Sudbury, Ontario, to share Canadian mining know-how with the Indian work force at Hindustan Copper Ltd's massive project at Khetri, Rajasthan. Jan Gortzak here helps Mohan Lal Malsaria assemble hoses for the jackhammer in the 421-metre level adit. In pic-*



*rounding countryside. Many of the miners still tend their fields and walk 10 or 15 km to and from work. HCL provided an incentive bonus to encourage them to maintain the new production norms. Most of these pictures were taken on a platform improvised by the Canadians to give easy access to the upper part of the rockface. The platform is supported by an LHD, the vehicle used for clearing away broken rock after each blast. The Canadians also taught their colleagues to use an iron ladder to anchor the air leg. The other Canadians participating in the first six-month stint of the Canadian International Development Agency scheme were Chuck Lilley, Brian Woodcock, Ned Legge, Keith Dupont and Irwin McAlinden, with Bill Honeywell supervising. They are employees of MacIsaac Mining & Tunneling of Sudbury.*

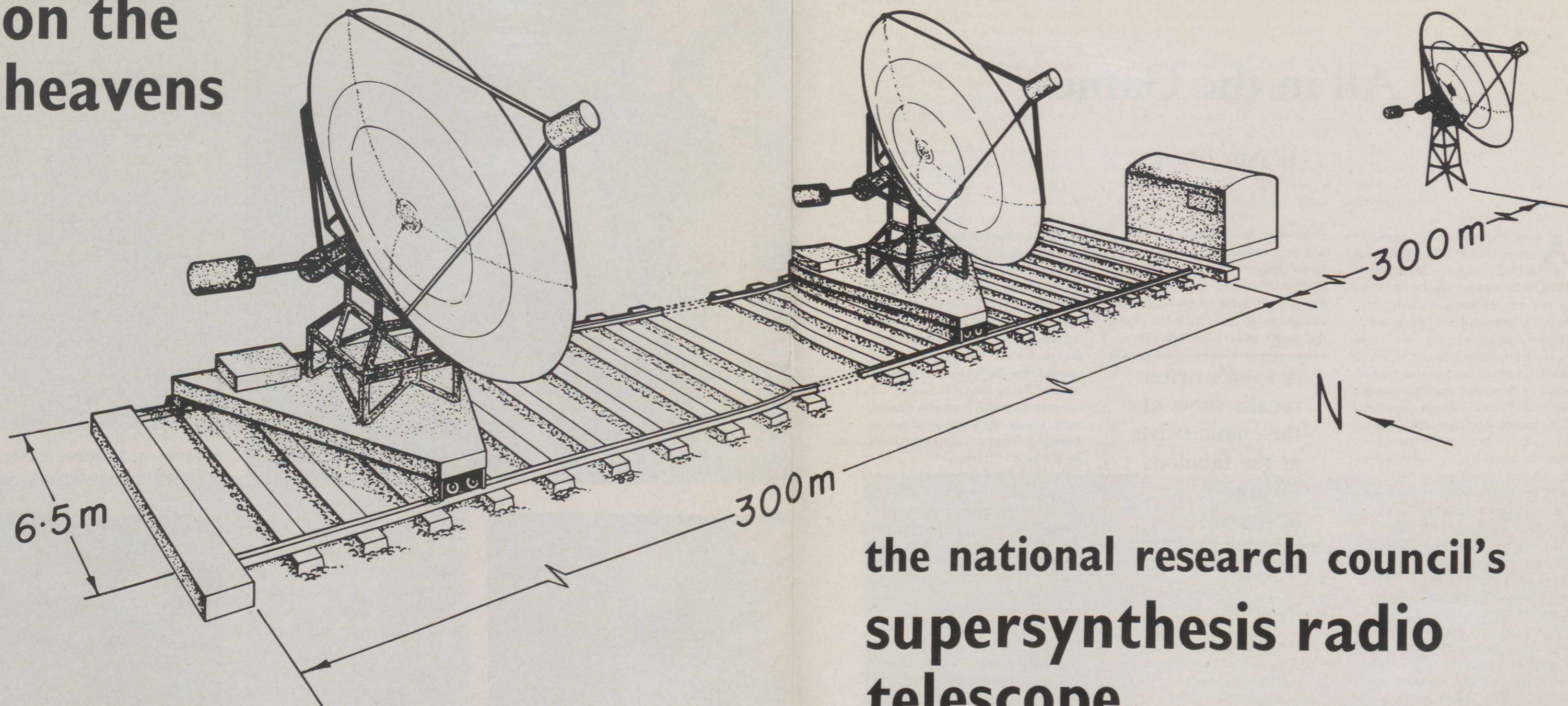


*ture bottom left, Chris Renger shows Balchand Manot, Graduate Engineer/Training, how to line the face before drilling. The chalk mark serves as a guide to keep the drill aligned. In picture top right, the drill is steadied while a hole is started. Proper spacing and alignment of the holes was a key contribution of the Canadian team. Within weeks of their arrival last October the rate of advance in the Decline at the neighbouring Kolihan mine increased from .9 to 2.7 metres a day. When the Canadians moved to the 421 adit, the rate of advance in the Decline was maintained. In lower centre picture, Leo Widden helps attach air leg to jackhammer. Most of the Indian miners are small farmers from the sur-*

PHOTOS: K. G. K. NAIR



# new window on the heavens



by DONALD CROCKFORD

MAN'S understanding of the universe, during the last four centuries, has progressed from the belief that the earth was the center of the heavens, to present knowledge that the earth is merely one of the planets revolving about the sun. Our Sun is one of 100,000 million stars in our galaxy, and our galaxy is only one among the multitude in the universe.

Galileo's first telescope showed the moons of Jupiter, the phases of Venus, sunspots, mountains on the moon, and an almost unbelievable number of stars in the Milky Way. Since the inception of this primitive telescope, man's ability to construct larger and more complex instruments has led to a wealth of new information about the universe.

Large telescopes, often with the aid of photography, have revealed distant planets, masses of luminous gas, dark dust clouds, clusters of stars and millions of remote galaxies. The spectrograph has enabled astronomers to measure the velocity, temperature and chemical composition of the stars, nebulae and other bodies. In the last three decades, the radio telescope has provided new information about familiar astronomical objects and has aided in the discovery of hitherto unknown remote galaxies.

Radio waves (electro-magnetic waves of long wavelength) originate not only from radio and television stations, but are emitted from the sun, moon, planets, stars, gas and dust of our own and many other galaxies. The

## the national research council's supersynthesis radio telescope

possibility of receiving these radio waves was first suggested by Thomas Edison in 1890. This theory was confirmed in 1932 when Karl Jansky, an engineer with the Bell Telephone Laboratories in New Jersey, detected extraterrestrial radio waves. The first radio telescope was designed and built by Grote Reber in Illinois in 1936. Since the end of the Second World War, radio astronomers around the world have discovered hundreds of radio sources which have been identified with remote galaxies, quasars, supernovas, clouds of ionized hydrogen gas, pulsars, and X-ray sources.

Fifteen miles south of Penticton, British Columbia, the Dominion Radio Astrophysical Observatory of the National Research Council of Canada is putting into

operation a new instrument for the investigation of radio waves emitted by galactic and extra-galactic objects. The Observatory's original 26-metre telescope cannot resolve the structure of an object in space that has an angular size less than about half a degree. Resolution is proportional to the size of the telescope and since most galaxies and nebulae have angular structures much smaller than half a degree, their study requires a much larger telescope. An equivalent resolution, however, can be obtained by using a variable-spacing interferometer, in which the outputs of two much smaller antennas are combined. Principles involved in the new development at the Observatory are well known and the design of the system to utilize

*Continued on page 18*

# All in the Games

by ANDY O'BRIEN

AS ALMOST everybody knows, the games of the XXIst Olympiad will take place in Montreal in 1976. What can we possibly produce in the way of funny moments that hasn't happened during the other 20 Olympic games?

The marathon race, a feature of the Olympic games, can almost always be depended upon to produce something zany. Even in the calmer Commonwealth Games, so contrasted with the pressure-cooker Olympics, the marathon manages to introduce an odd twist. At the 1966 event in Kingston, Jamaica, we were wondering if any runner would survive the grind of 26 miles, 385 yards, in the sweltering August heat. The winner was a panting Scot named J. Alder but would you believe the poor fellow found the entrance to the stadium blocked off by police when he arrived? Prince Philip's entourage was late in getting there and Alder had to be detoured. If that traffic block had cost him the win, would Scotland have seceded from the Commonwealth?

The only hotter setting than Jamaica was the marathon finish at the Rome Olympics of 1960. The cobblestones of the Appian Way were hot enough to fry an egg while we waited for the winner at the finish line under the Arch of Constantine. Finally came the winner, an Ethiopian palace guard named Abebe Bikila, eight minutes ahead of the record—and barefooted. At the press interview he explained: "Too hot for shoes."

We still see pictures from the London Olympics of 1908 when Italy's Dorando Pietro, a candy maker from Capri, had to be helped across the

finish line by sympathetic doctors and minor officials after he had collapsed only 100 yards from victory. Pietro, of course, was disqualified but he went home happy with a special gold cup presented by Queen Alexandra, wife of Edward VII.

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## A sports writer recalls some of the comic twists at the fabulous Olympics of the past.

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But even that didn't eclipse the zany marathon race four years earlier in St. Louis. Entries were made in a casual way at that time, so a Cuban named Felix Carvajal gave up his job as a postman in Havana and talked his way aboard a ship bound for New Orleans where he got into a game and lost his money and baggage. He hitchhiked and walked to St. Louis where he ran the race in street clothes—including ordinary street shoes—to finish fourth among 31 starters and become the toast of St. Louis.

But that wasn't all.

Two concession workers, members of the South African Bantu tribes, became bored with their jobs and decided to enter that same marathon race. One finished ninth despite being chased a mile off course by a dog; the other was 12th.

Then there was an American Mohawk named Fred Lorz who was forced to halt with stomach cramps

only nine miles from the stadium. An auto picked him up but broke down near the stadium. Lorz thanked the driver and continued to the stadium to pick up his clothes. He thought he might as well run since the cramps were gone. As he entered the stadium a thunderous ovation greeted him. Delighted and confused by the fuss, he waved as he ran; officials escorted him to receive the winner's award from Alice Roosevelt, Theodore Roosevelt's wife, but somebody howled "Imposter!"

Amid all the commotion surrounding non-winner Lorz, the real winner, an American named T.J. Hicks, jogged into the stadium barely able to see. The fellow was plastered. Along the route his handlers had noted that Hicks was weakening and bolstered him with generous shots of strychnine with brandy chasers. As Mrs. Roosevelt handed him the award, Hicks asked, "What's this?"

At the Innsbruck Winter Olympics of 1964, the opening day show was stolen by a photographer. He had found an ideal spot for an overall picture atop a ski jump slide but, at his big moment, he slipped and slid 75 metres as 50,000 cheered.

Four years later, at the Grenoble Winter Olympics, reporters stood frigid and puzzled at the bottom of the slalom course which was blanketed by fog and mist. We were waiting for Jean-Claude Killy, darling of France, to win his third gold medal. Killy was first in the second of the two-heat runs for an impressive time of 99.75 seconds.

A Norwegian followed; he beat Killy's time but was disqualified for missing gates. That left Austria's

Karl Schranz, who placed third in the first heat, as Killy's most serious threat. Schranz took off well in his second run but pulled up en route, claiming a spectator had appeared in the fog stumbling across the course. He was allowed a re-run and his time beat Killy's... then the argument started. The checkpoint judges stated that Schranz had missed two gates before encountering the spectator at gate 22. Killy was awarded the gold medal.

At least we had an excuse for not seeing that one, but I still blush over the memory of another finish at my first games, the London Olympics of 1948. Would you think it possible that reporters could have missed seeing the winner in a confined 100-metre final on a sunny afternoon at Wembley? Well, most of us did, and this is how it happened.

There were 80,000 pairs of eyes glued on the first three of the six lanes. Mel Patton, the American holder of the world 100-yard record,

was favoured, but another American, 31-year-old Barney Ewell, was a red-hot challenger, as was Lloyd LaBeach from Panama. We were delighted that the three were running side by side because that would leave the outcome clearly in sight. At least, so we thought.

The trio broke as if from the same cannon. Ewell began edging by Patton at 50 metres and by LaBeach at 80 metres to lunge across the finish line lifting his arms in glee as 80,000 cheered. There was only one funny angle to it all—way over in the sixth lane another American, Harrison "Bones" Dillard, had edged Ewell by a foot.

"It sure felt good out there with no hurdles in my way," winner Dillard told the press conference later. You see, he had come to London as a hurdler—nobody had ever given him serious thought as a sprinter.

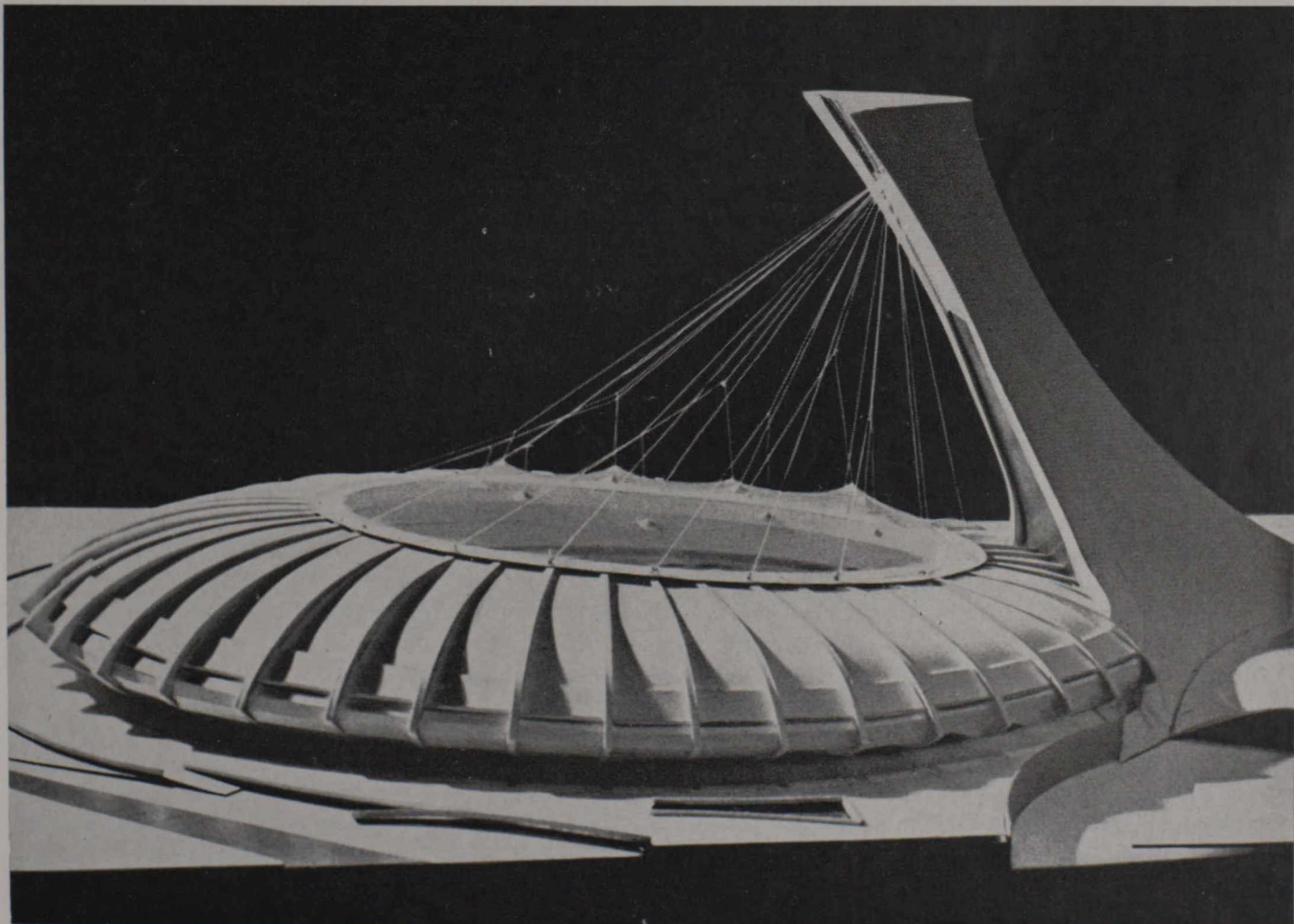
But I did get one break at that first Olympics experience; it was in the 800-metre final. There was a 29-year-

old sports writer, Marcel Hansenne of France, for whom I was secretly rooting as a colleague. He didn't win but my break came because another Frenchman in the same event didn't win either. His name, no kidding, was Chef d'Hotel. Can you imagine the job I would have had convincing the copy desk back in Canada that the name was for real?

Swimmer Eleanor Holm was boot-ed off the American team for whooping it up with champagne during an officials' party aboard ship en route to the 1936 Berlin Olympics. A somewhat similar crisis at the Tokyo Olympics of 1964 was passed off with a chuckle. Australia's fun-loving Dawn Fraser, in celebrant mood after winning her third gold medal, was arrested for a fourth swim—across the moat surrounding Emperor Hirohito's palace.

The quarter-century change in reaction to the doings of women athletes was, it could be pointed out, nothing compared to the giant strides

*Model of the 70,000-seat Olympic Stadium which will be the venue for track and field and football events and the Prix des nations. The building will also house a swimming pool with accommodation for 9,000 spectators for swimming, diving and water-polo.*



made since the games of about 700 BC in Greece. Then a lady was not only forbidden even to watch the games but was thrown off a high cliff if caught looking.

And a comment for those athletes who will be complaining at the Montreal Olympics, as they have at all

other games, that amateurism is costing them too much.

The chariot race used to be a really big event in the early days of the Olympics but most drivers were happier to finish second. The reason? Not only was a chariot racer expected to pay for his own chariot and horses

but also, if unfortunate enough to win, he was expected to pick up the tab for the victory banquet.

And, in that period, any banquet lasting under three days would tag the charioteer as an Olympic spoilsport. □

## Paying for Montreal 1976

**I**N JULY 1976, Olympic athletes from 130 nations will gather for the first time on Canadian soil for the Games of the XXIst Olympiad. Montreal, of Expo '67 fame, will be the host city.

For any nation, the task of organizing the Games is a formidable enterprise in view of the spiralling costs and the physical expansion of the Games over the past few decades. The problem of financing the Olympic Games without imposing an excessive burden on Canada's 22 million people is being met by a series of projects designed to make the Games virtually self-financing. By far the most ambitious of these projects is the 1976 Canadian Olympic Coin Program. Established under the authority of the Canadian Government, the program aims at the sale of some 60 million specially-minted coins commemorating the first Olympics ever held in Canada. The coins will be minted in sterling silver.

Revenues from the sale of the coins are expected to exceed \$500 million and produce a profit of \$250 million to provide the major portion of the total Olympic Games budget of \$310 million. The remaining \$60 million will come from the sale of Canadian commemorative stamps, Canadian Olympic Lotteries, the sale of TV rights, the licensing of the Olympic symbol and the sale of tickets to the events.

Canada is not the first country to strike and market commemorative coinage for the financial support of the Games. Over the last two decades, five other countries have undertaken similar projects successfully, namely Finland, Austria, Japan, Mexico and West Germany for the 1972 Summer Olympics. What sets the Canadian Olympic Coin Program apart, however, is the marketing of the coinage on an international scale never before attempted. It is estimated that out of a total of some 60 million Olympic coins to be minted over a three-year period, purchases by Canadians will account for about 40 per cent and the rest will be made available throughout the world in all countries expected to send Olympic athletes to Canada in 1976.

As a basis for comparison with the Canadian program, West Germany produced some 100 million Olympic coins to help finance part of the cost of the 1972 Olympics and it has been estimated that about 10% of the coins were sold outside its border. By contrast, Canada plans to sell 60% of its Olympic coinage in other countries. In this way it is hoped that Canada will create a precedent opening a new vista on the vital aspect of financing future Olympic Games. If Canada is successful, the staging of the Olympics on their own soil may become financially feasible in the future for a host of the world's

smaller nations. In this respect, many countries will be keeping a close watch on the progress of the Canadian Olympic Coin Program between now and the summer of 1976.

Canada will issue seven series of four distinct coins: one series every six months until the summer of 1976. Each series consists of two \$5 and two \$10 coins. The themes depicted on the coins will tell the story and commemorate the spirit of the Games themselves. The first series carries a geographic theme emphasizing the role of the host city, Montreal, the city of Kingston where the yachting events will take place, a map of North America, home continent of Canada, and a map of the world symbolizing the universality of the Games.

All of Canada's 1976 Olympic coins meet the criteria of designation of sterling silver under British standards with a fine silver content of 92.5 per cent (with 7.5 per cent copper alloy). The \$10 coin contains a fine silver weight of 1.445 Troy ounces and the \$5 coin, 0.723 Troy ounces; and total weight of each coin is 750 grains (1.5625 Troy oz.) and 375 grains (0.78125 Troy oz.) respectively. The maximum number of each coin in each series will be announced before minting begins. All the coins are struck under the strictly controlled standards of the Royal Canadian Mint. □

and petrochemical business for many years.

Soon after the Arab countries raised the price of crude, Canada's Energy Minister Donald McDonald raised the export tax on Alberta oil from 40 cents to \$6.50 a barrel so that the people of Canada as a whole, not just of Alberta, could benefit from the new high price in Chicago.

However extensive, the fossil fuels are finite and non-renewable. Just as we passed from the age of coal and steam to an age of oil and electricity, so we are inevitably going to pass into a nuclear age. In fact we've already started: the nuclear generating station at Pickering is the most advanced and problem-free in the world today. But the transition will take a long time and will never be complete. Oil is used for more than burning. Oil is lubrication, gasoline, insulation material, anything that's made of plastic or polyethylene.

**M**EANWHILE Canada's longterm prospects are bright. In Alberta alone we have about seven billion barrels of oil left, and some 65 billion barrels recoverable from the oil sands, and 53 trillion cubic feet of natural gas. The ultimate recoverable potential is estimated at 99 billion barrels of oil and 783 trillion cubic feet of natural gas. But practically all of that is in the ground, and thousands of miles away from where it's needed. To market the natural gas in the Mackenzie Delta would require building the 2,600-mile Mackenzie Valley pipeline at a cost of \$5 billion and there are several opinions as to the impact that kind of expenditure would have on the Canadian economy. Quite apart from the financial problems there are the ecological and sociological ones. The Arctic is a fragile land. The 22,000 Eskimo and Indians who live north of the 60th parallel have coped with the advance of white culture, but practically everything the white man does in the north destroys something the indigenous people had depended on for their livelihood. Professor Robert Page of Trent University says the permafrost—the permanently frozen ground below the surface—is covered by a very thin layer of tundra vegetation. If this is broken, the permafrost is exposed to summer melting and erosion. It is through such land that we are planning to build a pipeline. But the Mackenzie pipeline must eventually be built, and whether we can afford to build it ourselves or not, our industrial south must eventually have access to the natural gas trapped beneath the surface of the Arctic.

Rowland C. Frazee, executive vice-president and chief general manager of the Royal Bank, estimates that we must spend on energy development between 1971 and 1985 a total of \$95 billion. About \$31 billion of this will be spent on the oil industry alone, and another \$60 billion on such projects as developing nuclear generating stations and coal gasification. In the immediate future he sees six billion dollars being spent on the Mackenzie pipeline, another five billion dollars for the James Bay hydroelectric project which is crucial to Quebec's energy plans, and perhaps nine billion dollars invested in the Athabasca tar sands within the next 10 years. He admits that if all these projects "hit the street" for financing all at once we shall have a difficult time indeed, But "given a coordinated effort by the financial community", he is confident Canada can cope. □



*Technicians load one of the four 540-megawatt reactors at the Pickering nuclear power station before power start-up. The CANDU system using natural uranium fuel with heavy water as the moderator and coolant was adopted by India's Atomic Energy Commission for the Rajasthan Atomic Project (RAPP) and the parallel projects at Kalpakkam and Narora. Argentina and South Korea have also adopted the CANDU system. A 3,000-megawatt CANDU nuclear power station is under construction at Bruce, Ontario.*

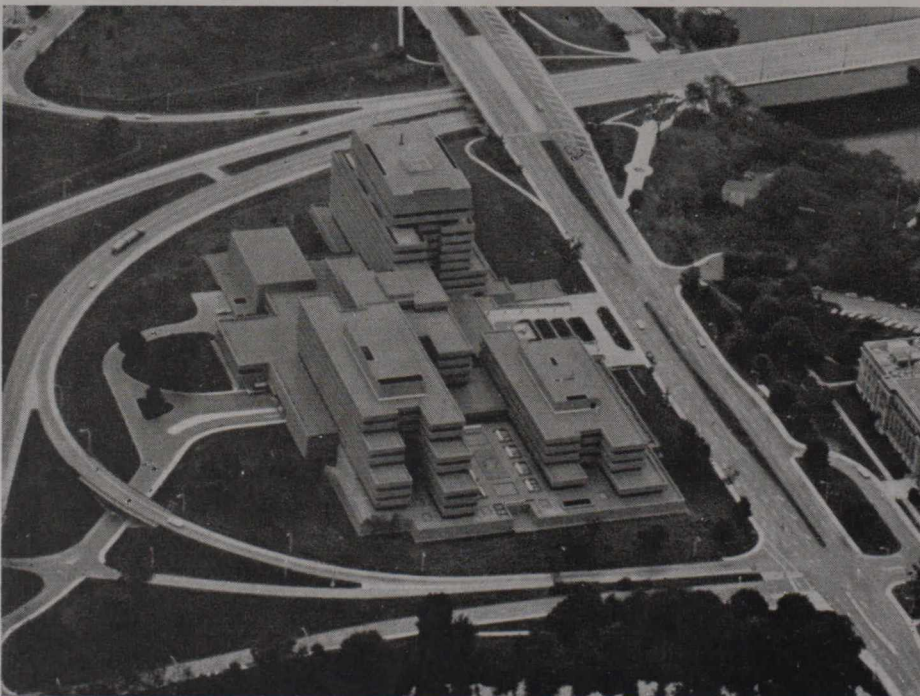
the hilltop fort, timeless India existing side-by-side with the huge copper complex. They weren't prepared for the cold weather, though: someone had told them it was always hot in India. Three months after the Canadians arrived the temperature was down to  $-5^{\circ}\text{C}$  in nearby Churu.



Thirteen highschool students from Red Deer, Alberta, were in India in February for the adventure of a lifetime. Thanks to the initiative of their teacher, Gurmail Singh Bassi, they were able to translate a classroom daydream into a real-life encounter with a very different society. Almost the only outlay was on travel: once in India, the students stayed with Indian families, thereby learning more of the country than any run-of-the-mill tourist. The program was ambitious, for all that: Chandigarh, the Bhakra-Nangal project, Amritsar, Jullundur, Ludhiana, Patiala, Agra, Fatehpur Sikri and, of course, Delhi. The tour included visits to Punjab's prosperous farms, to a sugar mill, to Ludhiana's agricultural university, engineering college and factories and as many historical monuments as could be crowded in. The first thing that struck the boys and girls of Innisfail High School when they alighted from the plane at Delhi was the grass: they hadn't seen any for three months, Alberta being snowbound. This was the first such visit by Canadian schoolchildren and the Innisfail group seemed well aware of their good fortune. The Government of Canada chipped in with \$250 per head to cover half the travel costs. What with last summer's visit by Canadian university students under the Shastri program (CANADA, Vol. 7 No. 4), it would seem India is very much the "in" place for Canada's youth.



*Continued on page 19*



*An aerial view of the new home of the Department of External Affairs on the banks of the Ottawa river in Ottawa. It is known as the Lester B. Pearson Building after the late Prime Minister and Nobel Peace Prize winner.*

### the supersynthesis radio telescope

these principles was worked out by the Observatory staff.

The new instrument consists of two radio telescopes mounted on an east-west track some 300 metres long. The signals received by the two movable 8.5-metre parabolic reflectors are combined to produce the effective resolution of a 300-metre paraboloid—a structure which would be prohibitive in design and cost. In order to obtain the information required to map a region of sky with this instrument, it is necessary to observe the region for 12 hours at each of about 120 spacings of the small reflectors. The data for all spacings are then combined in a computer to produce maps with a resolution similar to that obtainable with a paraboloid whose diameter is about equal to the maximum interferometer spacing. A correlation spectrometer resolves the data into a number of channels of differing wavelength. The wavelength difference can be related to motion of hydrogen gas in the galaxy. The system will produce maps for 125 velocities of hydrogen gas in an area of sky two degrees in diameter with a resolution of one minute of arc.

"The main purpose, says Dr. J.L. Locke of the Astro-physics Branch, "is to provide detailed analyses of the distribution of atomic hydrogen in our galaxy and in external galaxies. Atomic hydrogen is the most abundant substance in interstellar space and its distribution defines the structure of a galaxy. This hydrogen emits radiation in a spectral line located in the radio region of the spectrum. These radio waves are not attenuated by the dust in interstellar space and thus provide a means for studying all parts of our galaxy. The rotation of the galaxy and the peculiar motions of hydrogen clouds can be examined. By studying the displacement in the wavelength of the line from its normal position, the astronomer can determine the velocity of the clouds along the line of sight. From these observations the nature of the galaxy's rotation and the relative motion of the hydrogen clouds can be examined.

*Continued on page 19*



Fernie has notified the Alberta Government it would like the provincial boundary redrawn to make the British Columbia town into an Alberta town. The basic reasons are an affinity for Alberta due to closeness and a frustration at being slighted by Victoria.

What brought it all to a head was a map prepared by the B.C. Government for Expo '74 in Spokane, south of the US border. The map neglected to include Fernie, which has a population of 5,000 and some fine fishing, hunting and skiing. With this latest snub to peg a secession on, the Board of Trade in Fernie wrote a letter to Mr. Barrett to "let us go gracefully" and to Mr. Lougheed suggesting he support efforts to shift the Alberta border about 25 miles west of Fernie to take in the entire coal-beating area.

Fernie's overture to Alberta has constitutional experts studying the law books. Edmonton lawyer Pat McDonald, a sessional law teacher at the University of Alberta, said Fernie's wishes could be met provided both provinces involved agree. If Alberta and B.C. were to enact legislation approving the switch, the federal House of Commons then would have to also give a stamp of approval. If the provinces can't agree, the case could go to the British Parliament.

The Fernie issue is actually the second such case within a month. Lloydminster, the town that straddles the Alberta-Saskatchewan border east of Edmonton, decided earlier to study the possibility of joining one province or the other, with Alberta probably favored because of the absence of a sales tax. Cabinet ministers at that time indicated they didn't relish the prospect of a confrontation with Saskatchewan over the town and no doubt the same holds true today in the Fernie case.

But Social Credit MLA Charles Drain, who represents the Crow's Nest region in Southwest Alberta, said he will bring the Fernie case before the Alberta Legislature at the spring session. He said Fernie people have a "wonderful idea" and feels it was a geographical blunder that put Fernie in B.C. in the first place.

That blunder plunked Fernie down in the mountains in the southeast corner of B.C., but only about 30 miles from the Alberta border. It's 700 miles to Victoria compared with 395 to Edmonton and only 205 road miles to Calgary. Most of the people in the Fernie area shop in Alberta and most of the commercial travellers who sell to Fernie are from Alberta.

Said Fernie Mayor Vern Uphill: "The only time Victoria ever pays attention to us is at tax time."

"The struggle in radio astronomy," explains Dr. Locke, "is to get better resolution and because radio telescopes work at long wavelengths, high resolution implies very large apertures. The synthesis technique is a practical solution to the problem of achieving a large aperture and enables resolving powers to be obtained in the radio region of the spectrum which are equal to those of optical telescopes. The new synthesis instrument will permit high-resolution studies of the distribution and motion of gas in our own and external galaxies."

The Penticton site was chosen for the radio observatory because of its isolation from terrestrial sources of radio interference such as radio and radar transmitters, automobile ignition systems and electric motors. □



#### STATEMENT FORM IV

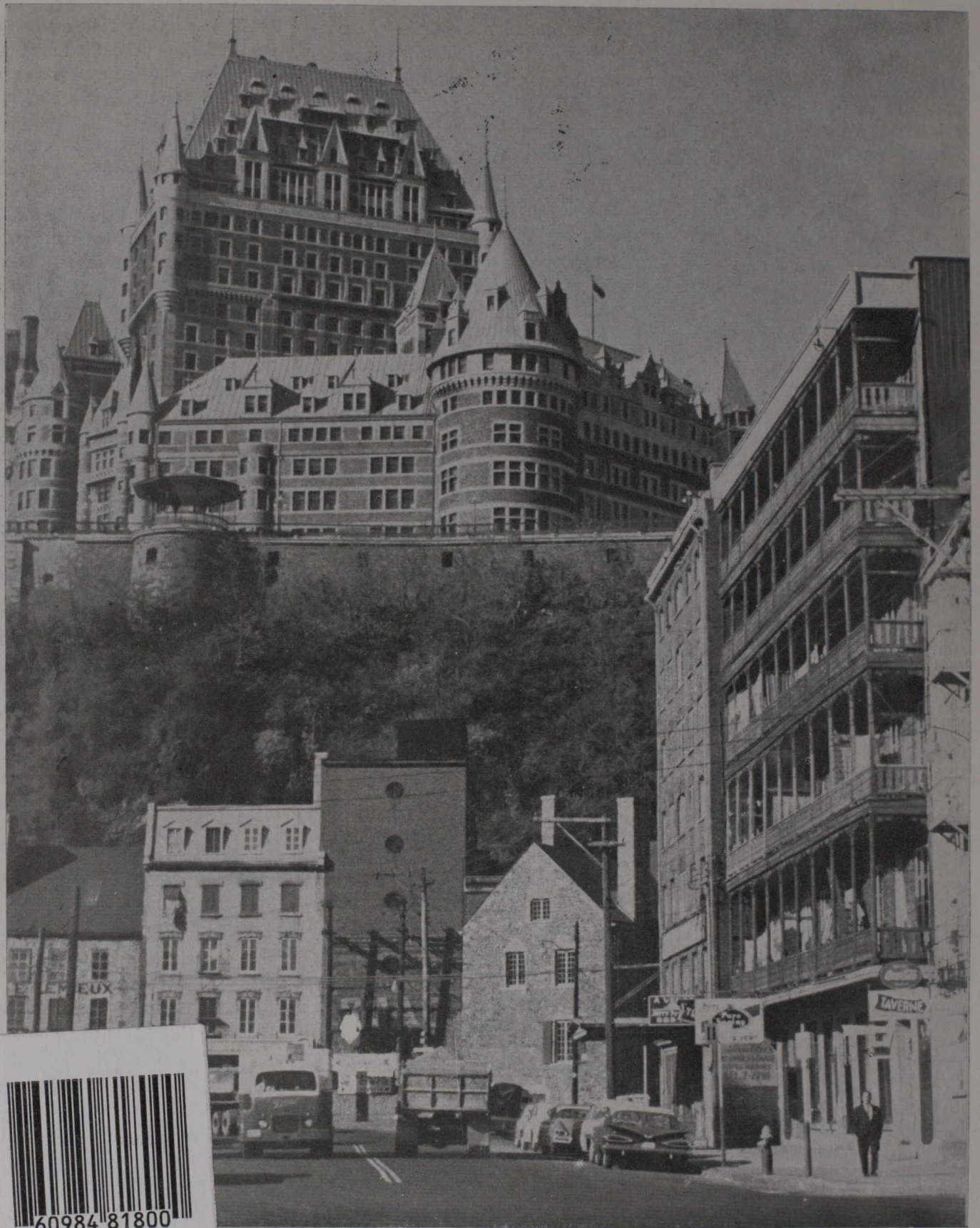
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I, Don Eichert hereby declare that the particulars given above are true to the best of my knowledge and belief.

New Delhi, March 31, 1974

Don Eichert  
Canadian High Commission



*Like an echo of mid-European fantasy, Quebec City's Chateau Frontenac broods over lower town. Not what you would expect of a Canadian townscape, but then what you expect? Beginning with the next issue, CANADA magazine will carry picture features on the varied personalities of Canada's chief cities.*