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## Canada's Big Back Yard

[THE NORTHWEST TERRITORIES]

MAY - 2 1975

The Northwest Territories is an enormous triangle of land, water, trees, ice, rock, minerals and oil.

It is the greater part of Canada's upper half and most of it has remained unchanged for ten thousand years. It has 1,304,903 square miles and more than 40,000 people, the majority of whom live in small settlements along the Mackenzie River and in two towns, Yellowknife and Inuvik.

The NWT has four vast regions — the one on top is the Baffin region, the islands of the Arctic, Ellesmere, Melville, Devon, Banks, Victoria, Baffin and the rest. It has one sizeable community, Frobisher Bay, on Baffin Island, above the Hudson Strait, which has a population of 2360 and which was incorporated as a hamlet on April 1, 1974. The regions below, Inuvik, Fort Smith and Keewatin, stretch east from the Yukon to the Atlantic.

The regions are not cohesive; only the long winters, the permafrost and the mapmakers give them a rough unity. The upper part, above the tree line, is a land of ice, polar bears, oil and the aurora borealis. The east, on the shores of Hudson Bay, is hard rock, rich in minerals. The most hospitable part is in the west, the sub-Arctic, from the Great Slave Lake in the Fort Smith region, up to Tuktoyaktuk, in the Inuvik region, along the Mackenzie to the edge of the Beaufort Sea.

The Mackenzie is Canada's longest river; it flows north. Its valley lies between the mountains to the west and the barrens to the east, and it is in large part broad and flat with rich, solid soil in the south. There are substantial forests in its southwest, with trees up to twelve inches thick, and there are skinny little willows in the north, centuries old and no broader than a man's thumb. It has an ever-changing delta of flat, thin bush cut up by a million lakes, ponds and streams. It has Great Bear Lake which is a quarter as large as England and so cold that the fish stay close to the shore. It is, among other things, a natural place to lay pipelines to carry Arctic oil and gas.

The climate of the NWT is surprising — it is cold but not as totally cold as the uninitiated assume; Yellowknife on the Great Slave Lake, the capital of the Territories (and with 8300 people the most populous town), has a mean July high temperature of 68.8 degrees and a mean January low of minus 25.6. Days of 80 degrees and above are common in July and the southern part of the Mackenzie valley has three and a half frost free months a year. Fort Smith, near the Alberta border, has registered 103 degrees in the summer, a temperature which would attract attention in Florida, and even Tuktoyaktuk, above the Arctic Circle and on the edge of the Beaufort Sea, has a

mean summer high of 58.5.

Outside interest in the NWT has grown enormously in recent years, as an energy-short world has become aware of the reserves of oil, gas and minerals that lie beneath its chill surfaces. In this issue of CANADA TODAY/D'AUJOURD'HUI we will present a few basics about the NWT and its natural resources, including its flora, its fauna and its people.

[THE LAND AND THE WATER]

Part of the NWT is a frozen desert; yet it has large fresh water resources. It also has herds of animals, flights of birds, summer clouds of mosquitoes and endless fields of spring flowers.

It is a desert because little rain falls there — about as much as in Egypt: Holman Island has

2.51 inches of rain a year and about 31 inches of snow. Since ten inches of snow equals one inch of rain on the average, that adds up to only a bit more than the equivalent of five and a half inches of rain annually. Using the same scale, Inuvik has the equivalent of 10.8 inches, Tuktoyaktuk 6.15 inches, Yellowknife 10 inches and Frobisher Bay 16.11 inches.

It is able to support an abundance of wildlife and plants because the rain (and snow) that falls remains cradled on the surface, above the impenetrable permafrost and in the great, granite basins of the Precambrian Shield. If the permafrost were to melt the water would drain down through the porous earth and the land would be as dry as the Sahara. If the basins were drained no one now alive would ever see them filled again.

The permafrost is the significant feature of part



of Canada's North — it underlies the surface wherever the mean annual temperature is less than 24 degrees.

It may be shallow — a few inches deep below the surface — or it may be deep — at Resolute Bay it goes down at least 1600 feet. The surface ground thaws in the summer but the permafrost remains.

It may be mostly ice, it may be a mixture of ice and sand or loam, and it may be solid rock or dry, well-drained gravel.

It is the saviour of the North but it is also its scourge: It plays havoc with roads, it causes spring landslides when the soggy soil on the surface slides down the hillsides over the ice base, and it makes building expensive and difficult. A heated building flush on the earth's surface would melt the permafrost below for a few inches or a

few yards and (as has happened) walls would sink and floors would buckle. Buildings are now built on thick, well-drained, gravel pads or on wooden piles hammered into the frozen ground.

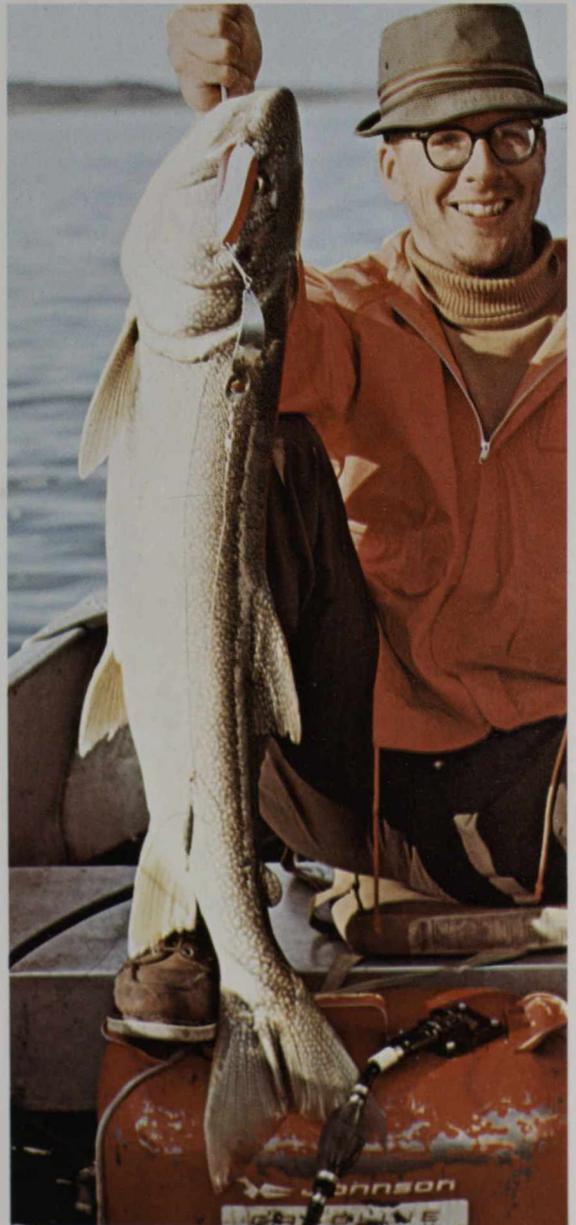
The permafrost has been in place since the Pleistocene epoch. It is receding — at a rate of 25 miles a century — but it will remain the basic foundation of Canada's North for a very long time to come.

[THE FLORA AND THE FAUNA]

The captured, cradled water of the North and the brief but constant summer sun — which shines around the clock in mid-summer — make things grow. The surface ground thaws, wildflowers line the banks of the Mackenzie and in some places vegetables mature quickly and grow to large size.



The government of the Northwest Territories has its own set of splendid emblems. The tapestry on the front page, created by Mrs. Jessie Oonark of Baker Lake, is hung on the wall whenever (and wherever) the NWT Council meets. On page two is the Mackenzie delta; ice, water, brush, trees and beavers. Climate affects fauna. The ptarmigan, above, has feathers on his feet, and the big fish is older than one might think. Fish in the Arctic grow slowly; a year-old trout is only two inches long.



**Photo Credits:** Cover photo: Government of Northwest Territories (GNWT). Page two: Ed Long, *Canadian Geographical Journal*. Page three: ptarmigan, *North/Nord*; fish, G.A. Erickson. Page six: mountain avens flower, GNWT; saxifrage flower, R.R. Taylor; Arctic poppy, M. Hoyer, *Canadian Geographical Journal*. Page seven: Imperial No. 1, Norman Wells, Imperial Oil Ltd. Page eight: Dick Hill, Inuvik Research Laboratory. Pages nine, ten and eleven: Bill Braiden, GNWT.

In the high Arctic — well above the tree line where summer temperatures rarely rise above 60 degrees — the growth is much slower, a tenth of the growth rate of the south.

The North's slow rate of growth and the isolation of its lakes and ponds have a curious result — waters seem to be teeming with an inexhaustible supply of huge fish. They are teeming but the supply is, by no means, inexhaustible. Take the example of Kiluktoo Bay:

In July the daytime temperature is around forty degrees and it is always daytime. The lake ice melts and the char head up the Robertson River to Kiluktoo, on the upper corner of Baffin Island, 400 miles north of the Arctic Circle.

The fishermen — Eskimos with three-pronged spears — are waiting. The Bay has five feet of fresh water on top, salt water below. The char cluster where the waters meet and they are big and numerous — a fisherman with a rod and a fly can catch his limit of four in a quarter of an hour while throwing back any weighing less than four pounds. Eight, ten, twelve pounders are common.

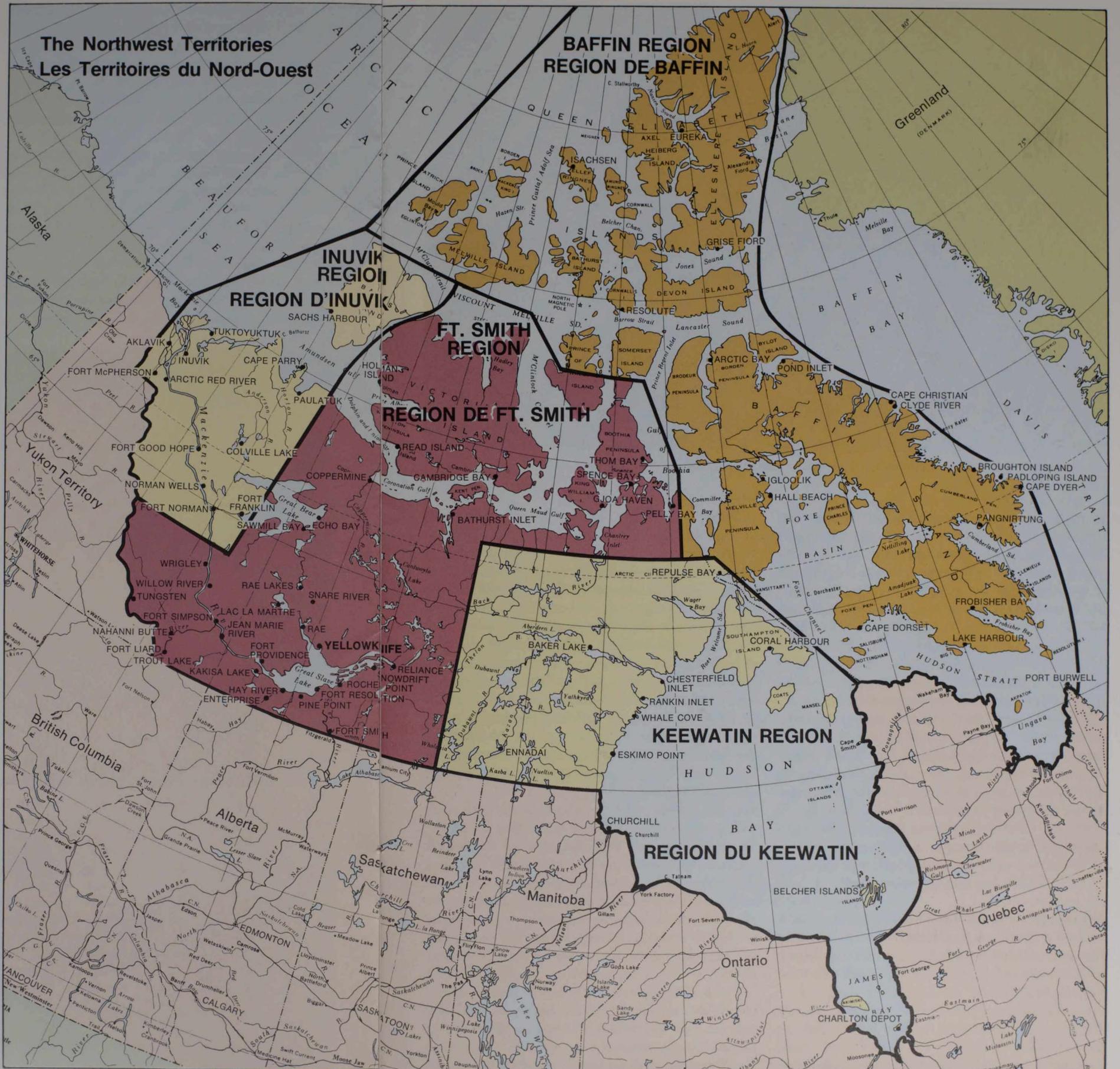
It seems like the fisherman's paradise but it is (perhaps like most paradises) at least partly an illusion. The big fish are plentiful because the fishermen are very few — a couple of dozen natives and, every now and then, an affluent outsider who has flown up in a small float plane to land on the water.

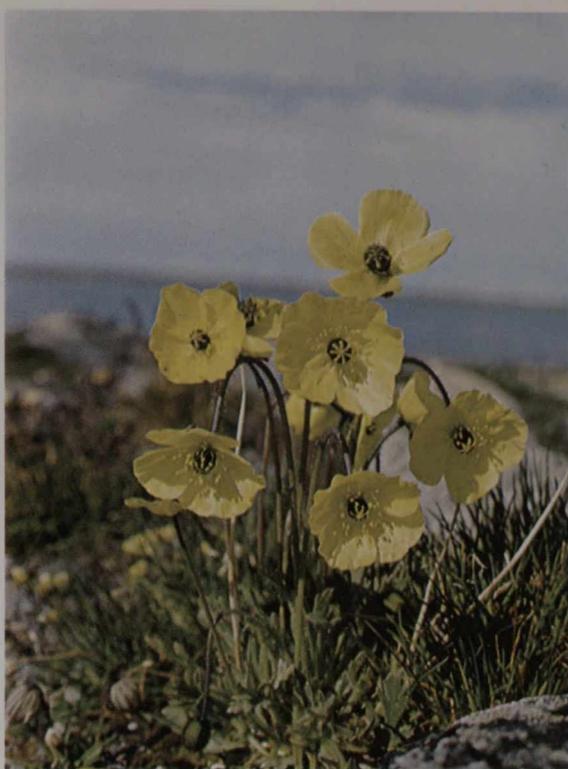
In these slow-growth waters a year-old fish is about two inches long. The twelve pounder that delights the fisherman is 30 years old. If there were no limit and there were enough flying fishermen from the south, there would soon be no twelve pounders, or ten pounders or eight pounders and, in time, no sporting-sized fish at all.

The animals of the north Arctic and sub-Arctic are numerous but fragile. In the lakes (beside char) are salmon, Great Lake trout, Arctic grayling, inonnu, northern chub, northern pike, sculpin, trout, perch, Mackenzie whitefish, Coulter's whitefish, flounder, Great Bear Lake herring, pike and smelt.

In the woods and the bush are caribou and moose, Dall sheep, mountain goats, black bears, grizzlies, wolves, beavers, muskrats, minks, martens, fishes and lynx, hares and squirrels. In the Arctic sea are polar bears, walruses, seals, whales and narwhals. None are inexhaustible and some (like the wood buffalo) have almost been exhausted. There are birds in flocks — the murres, which walk erect, somewhat like Antarctic penguins, ravens which never go south, terns which winter in the Antarctic, flying 20,000 miles each year, and the ptarmigans, which have feathers on the soles of their feet.

The flowers are plentiful, and since few men





*Arctic flowers are vivid; the mountain avens is above left, the purple saxifrage below, and the Arctic poppy right.*

fly up to pick them, they are likely to remain. But they too are slow growers; there are at least 834 different flowering plants and ferns in the Arctic and almost all are perennials because the summer is too short for the completion of a life-cycle. Most need many years to move from germination to first flowering. The Arctic has no climbing plants, it has none with spines or thorns and it has none that sting. The trees on the Arctic's southern edge grow so slowly that their growth rings can be seen only through a microscope.

Still, on a summer day one could be easily fooled even in the Arctic; in May or June the saxifrage appears on the hilltops, the Arctic poppy clings to gravelly soil, lichens and mosses cover the barren rocks and where bird droppings are plentiful (and nitrogen is therefore in abundance) there are often lush carpets of tiny flowers, as far as the eye can see.

#### [OIL AND OTHER RESOURCES]

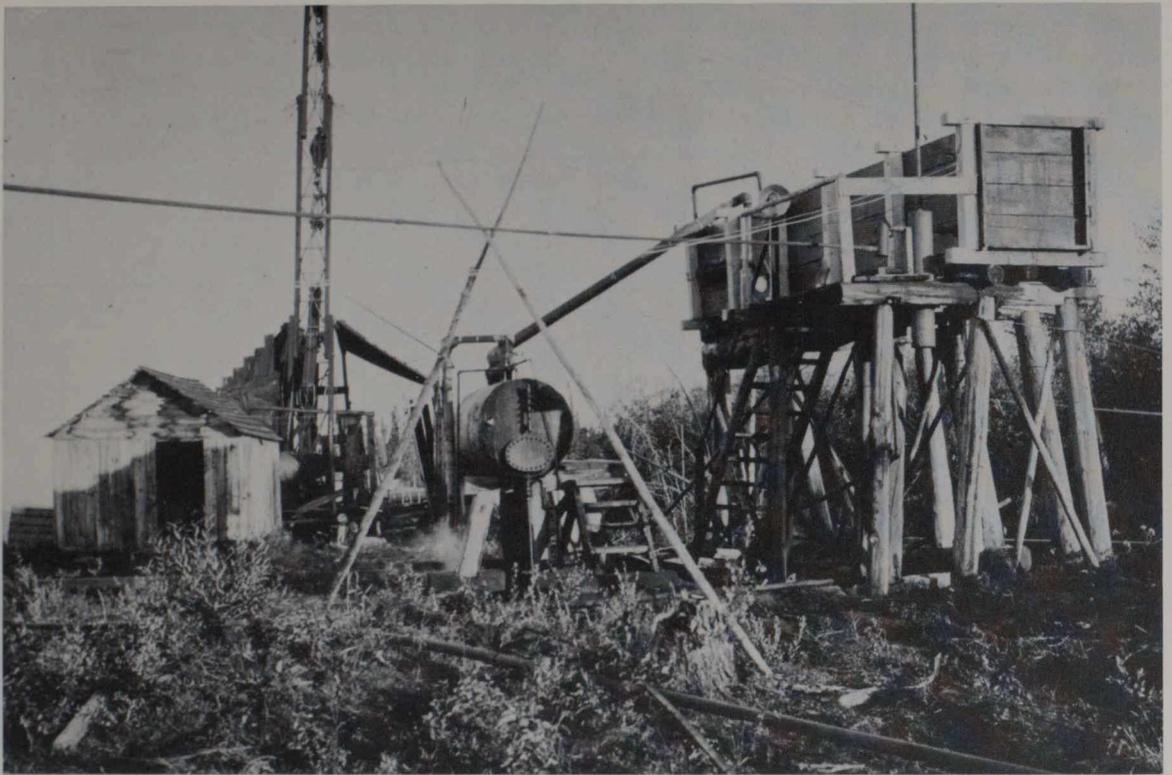
Flying north from Yellowknife, one passes over endless patterns of free-form lakes, pale red in the sun, almost touching, separated by brown land bridges and capes. They represent nature as the abstract artist.

Across the surface are occasional shining straight lines, crossing at right angles, as if some precise child, equipped with a knife and ruler, had scratched a painting while it was still wet.

The lines, left behind by men carrying out seismic surveys, are significant; by reading between them, one can decipher much of what is happening to Canada's North—the search for oil and gas, the change in the ecology, and the activities of men and machines from the south. The lines are accidental—the men who drew them unintentionally formed permanent channels of new vegetation. The vegetation along the channels is fresh and green and caribou and other animals seek it out. Some people say the lines have produced a fortunate addition to the caribou's diet, but others say they disrupt the migration of the caribou herds as they move from bush to barren and back to bush, and this could have disastrous results.

One thing is certain—men from the south will continue to disturb the topography of the North. Richard M. Hill, manager of the Inuvik Research Laboratory, told an Arctic pipeline workshop at the University of Toronto that "it is impossible, and not necessarily desirable, to turn off industrial development. All energies should be directed toward improving the quality of the developments rather than eliminating them."

To measure developments one must understand the magnitude of the resources. Oil and natural gas potential in Canada's North is, at casual glance, enormous—perhaps more than five times as great as that of Alberta, the richest



*Imperial No. 1 at Norman Wells was Canada's first oil producer.*

oil-producing province in the south. The potential may never be fully realized; the problems of extracting and transporting the oil and gas are themselves enormous.

The Laurentian Shield, the ancient rock formation which crosses Canada from Québec to Manitoba, may be the richest depository of minerals in the world; almost half of it is above the 60th parallel, 710,000 square miles within the Northwest Territories. In the NWT and the Yukon there are copper, asbestos, lead and zinc, gold, silver and coal. One of the world's richest iron ore deposits is on Baffin Island, NWT. Only a fraction of the known NWT resources has yet been touched, but mineral production has jumped 500 per cent in ten years.

Oil, at the moment, is the North's great magnet, drawing men and money north like iron filings in a lab. In 1789 Alexander Mackenzie found oil seeps at Norman Wells (he wrote that it looked like yellow wax and he wiped the whole thing out of his mind). Some 131 years later the first well at Norman Wells, Imperial No. 1, was discovered. Alberta's oil and gas fields were developed in the twenties, the forties and the fifties. Alaska's Prudhoe Bay field was discovered in 1967 and the oil search moved north in earnest. In 1970 Imperial announced the gushing of Atkinson H-25 northeast of Tuktoyaktuk, on the edge of the Beaufort Sea. It was the first of many discoveries in the Mackenzie delta, but soon the focus of search went beyond the land.

Today oil and gas operations — in various stages of search or development — crowd the lower Mackenzie valley and extend to the islands of the Arctic sea: Panarctic is drilling at Robert Harbour, planning two wells at Eglinton Island and drilling at Eids Fiord on Ellesmere and at Lougheed. Seismic tests are underway in Baffin Bay and Davis Strait.

The finding and pumping of oil is the lesser part of the battle — the oil of the North is far from the energy users of the south. There are two obvious ways to move it and both are expensive and controversial. Oil could be moved in tankers and supertankers but the possibility (some would say probability) exists that the use of tankers would result in an oil spill which could have serious and possibly disastrous effects on the ecology, not only of the North, but of the coastal lands in the south as well.

The assumption is that at least two large-diameter petroleum pipelines may eventually be built in the Canadian Arctic, and the one of principal interest now is the one planned in the Mackenzie valley. To study its possible effect on the environment the Mackenzie Valley Pipeline Research Project was announced in 1968 (shortly after the major discovery at Prudhoe Bay).

A full-scale, 48-inch, hot oil test loop was set up at Inuvik in 1969. A principal concern was the possible effect of hot pipelines on the permafrost. Since the substance of permafrost varies greatly, from dry gravel to mostly ice, it is universally

agreed that a pipeline along the Mackenzie would have to follow the least difficult terrain, avoiding when possible areas with high ice content. Richard Hill points out, however, that the pipeline right-of-way, including access roads, gravel sources and pumping stations, would occupy only 40 square miles of land, or  $\frac{1}{500}$  of one per cent of the total land in the Canadian North, and he believes that "with proper environmental engineering this small fraction of the region will recover from the construction disturbance, and there will be little effect on the renewable natural resources."

Nevertheless there is concern that a pipeline might interfere with the natural habits of caribou, moose, grizzly bears, wolves, muskrats, waterfowl and fish. For instance, when the pipeline crosses areas of high ice content on piles (to prevent permafrost thaw), it could form a barrier across caribou migration paths. Hill contends that such an adverse effect would be slight, since caribou

roam over vast stretches of land and the pipeline barriers would affect limited areas.

Hill believes that the greatest biological problem created by the pipeline is likely to be the fact that it will provide hunters and trappers with easier access to isolated areas. "If environmental care is taken during the construction and operation," he says, "it can be expected that natural phenomena such as drought and forest fires will cause considerably more disruption than the industrial activities."

For additional information on the Northwest Territories, you may wish to write to:

Mr. J. J. Otes  
Director of Information,  
Government of the Northwest Territories,  
Yellowknife, N.W.T. XOE 1H0

*Pipelines can be built on stilts to protect the fragile Arctic ecology.*



# The Uncommon Law

[JUDGE MORROW PRESIDES]

Justice William Morrow is the law north of the 60th parallel, the only representative of the Canadian judiciary in the Northwest Territories. He was a distinguished attorney in Edmonton, Alberta (he was among other things the last Canadian lawyer to argue a constitutional case before Great Britain's Privy Council), when he became concerned with the state of justice in the North. He found, for example, that when the native people went (or were brought) to court they were invariably without legal aid. So he became their volunteer lawyer, spending his summers flying the northern circuit without pay. When his prede-

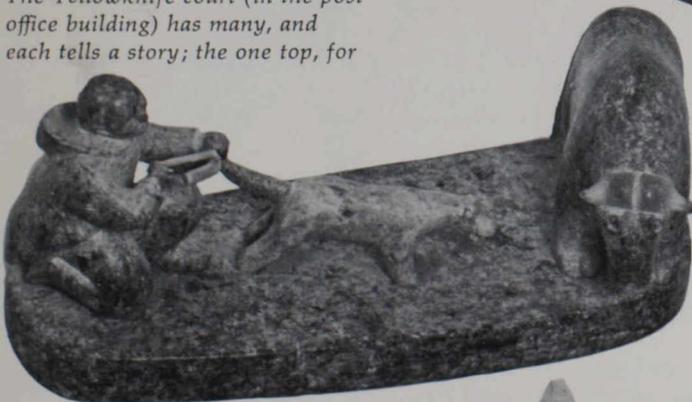
cessor, Justice Howard Sissons, retired in August, 1966, he took the job. The job is one fraught with difficulties, loneliness and hardship, but it has its interest for the legal scholar. Most recently, when doubt was cast on the authenticity of nineteenth and twentieth century treaties between the Canadian government and various Indian tribes, Justice Morrow toured Indian settlements and interviewed, among others, Julian Yendo, whose name appeared in the native syllabic writing on a treaty signed in 1921. Yendo told him that he has never been able — then or now — to write in syllabics. Below are excerpts from a paper written by Justice



*An Eskimo trial is unique in that it often produces a work of art. The circumstance which led to the charge is reproduced as sculpture. The Yellowknife court (in the post office building) has many, and each tells a story; the one top, for*



*example, shows Michael Sikyea shooting a duck out of season, contrary to the Migratory Birds Act. Judge Morrow's predecessor dismissed the charge, but the Supreme Court of Canada overruled him. In the centre group, a*



*Cape Colborne man is shooting a musk ox on sea ice in Queen Maud Gulf. The charge was dismissed. Bottom, a chief at Cape Dorset tries to drag a sixteen-year-old girl into his tent, while the girl's father, at right, objects. The chief banished both girl and father and was sentenced to three months.*



Morrow describing the way his court operates:

Since its inception the court has found it necessary to assume the role of a buffer between people coming out of a stone-age way of life . . . and a fully industrialized intrusion of people from the sophisticated south. . . .

As a rule court is held in the community where the alleged offence occurred — Fort Smith, Hay River, Inuvik and Frobisher Bay are serviced by hearings at regular dates. . . . The court makes a spring circuit and a summer circuit to the more remote communities in the central and high Arctic and during these trips all types of court work are handled. . . .

There are no courthouses as such . . . although four communities boast courtrooms located in government buildings. In most cases court is held in a schoolroom, Hudson's Bay warehouse, community hall or whatever facility may be available. On occasion it has been held in the court plane — on one occasion I held an adoption hearing in the air as we flew from Cambridge Bay to Spence Bay. . . .

The top sculpture involves witchcraft and murder. Shooyook and Aiyaoot were charged with killing Aiyaoot's mother. Shooyook was found guilty and sentenced to two years, suspended. Aiyaoot was not. A complicated family tragedy is depicted in the centre. Kikkik was accused of killing her half-brother

after the half-brother killed her husband. She then set out across the barrens in search of food, leaving two children behind in the igloo. She was charged with murder and with abandoning the children, one of whom died. She was acquitted on all counts. The bottom group illustrates a civil case; who inherited Noah's property? The decision was that his marriage by native custom was valid and that the issue of that marriage got the estate.

It is usual to charter the plane, a DC 3 or Beechcraft or Aztec. Sometimes it will be equipped with skis, sometimes with floats. . . .

It may be helpful to describe an actual circuit. Two years ago an Eskimo living in the remote settlement of Spence Bay, at the bottom of the Boothia Peninsula, was charged with rape. While out on bail he got into trouble again and ended up facing a second charge of rape. By now the local populace, some two hundred people, were aroused against him. Accordingly arrangements were made to have the two jury trials at separate communities. To ensure at least some Eskimos on the jury the locations chosen were Cambridge Bay and Inuvik.

On Monday the court party took off from Yellowknife, getting into Cambridge Bay about noon. While we proceeded to choose the jury for the first trial, the court plane was sent to Spence Bay, 310 miles away, to collect the witnesses and complainants. Next day the first case was concluded, the defendant being convicted of common assault. (Incidentally the jury was our first all-



female jury in history.) Next morning the court took off for Inuvik, some 600 miles away. Along the way we landed at Cape Perry, where by pre-arrangement a plaintiff in an undefended divorce action was driven up and we heard her case in the plane. We arrived at Inuvik by three in the afternoon and we heard the evidence in the second case the next morning. On Friday the full group flew back to Yellowknife where the accused was incarcerated. The complainants and witnesses then flew back to Spence Bay. So it goes.

## Present Shock

[OLIKTOAK AND THE SOUTH]

Oliktoak is 22 and one of ten children. She was born in Holman Island, which is at 70° 43' N., 117° 43' W., on the western shore of Victoria Island, in the Amundsen Gulf. Oliktoak now lives in Yellowknife, where she works in a shop which is owned by the Eskimo cooperatives and which sells prints, parkas, native sculpture and other products of the Eskimo craftpersons:

Most of the people at Holman Island work for the co-op. My two older sisters work there and my grandmother is an artist. She does the art work, the originals. She paints and we have carvers, who copy her paintings on the stone, and we have printmakers who make, like fifty copies of one painting and we keep the original and sell only the prints. My grandmother is named Helen Kalvak and she has thousands of different drawings. What she does mostly is make drawings of things she has experienced in her life. The prints are on rice paper, pressed by a stone block. We are getting out a series of ten different prints this year. In the co-op we also make seal-skin products and parkas and sealskin garments.

My grandmother is 73, the oldest person in Holman Island. Most of our people don't live to be more than eighty. I think that is because they lived such a hard life, much harder than we young people have been living, hunting for their food when they didn't have all that much white — ah — well, food from the south. But I think the old people had a much healthier life than the young because they had only meat and they didn't have sugar and all that to spoil their health.

Holman is in a bay and the population is about 250, less than 250 in the springtime. I think there are about thirty families and in the spring most of them are out for the summer, hunting seal, and in the wintertime there is a lot of trapping, and some men go and they kill polar bear but we have

a quota and our quota is twelve a year. It is not very difficult now to kill polar bear but my grandfathers have killed some before with a harpoon — before they got guns — that was more difficult.

I went to school in Inuvik for six years and they needed a teacher back home and I had the highest grades at that time and since then I've been working. I was a teacher assistant there at the school and when they had no nurse there I took a course for nurse's aid and I had to handle the medicine when people got sick. I could phone the nurses at Coppermine by radio. I was about 14 or 15 then. Only my older sisters and I went to the school in Inuvik because in 1964 or 1965 they started a primary school in Holman and since then all the students have been able to go to school there. After I worked in the co-op about two or three years I became the president and the head of the girls' shop. The co-op belongs to the people. We have members and the members get together once a year and we have a general



meeting and we have an election for the board of directors and then the board of directors elects their president.

Only very few people build igloos now, only those who go hunting in the winter. They will make an igloo to stay the night or so. I lived in an igloo many times; I think the last time was in 1958 or 1959. I think it was much fun for a child to live in an igloo. It is very warm, you have ventilation and the air is circulating. Once the igloo starts getting old it gets a crust of ice inside and it starts getting cold, so sometimes you will build a new one or just chip the ice off. We would have a stone lamp and most of the time we

had only that for light, but then people started buying Coleman gas stoves and we used those. When the stormy weather came and the men couldn't go out hunting, they would make carvings.

## Under the Ice

[MINNIE ARNGAQ GOES SHOPPING]

The environment of the North governs the daily life of the people who live there and produces techniques for living which can be startling to people from the south. Below, Minnie Arngaq of Kangirsujuak describes a fascinating method for gathering mussels during the long winter months:

*The women from the village help get food for the family. We usually wait until the tide goes out and then go down to the edge of the water to gather mussels. We even go in the wintertime when the bay is frozen in. We wait until the ice is thick and then dig a hole through the ice and go under the ice for them. The reason we can do this is that when the tide goes out the ice sinks down, but it doesn't go all the way down to the ground that the water has receded from. There is a space under the ice varying from three to six feet. First we try to find a place where we think there will be a lot of headroom under, and then we dig a 2 by 2 hole through the ice, and then*

*we go through the hole and under the ice. It's very dark down there so we take candles for light. It's also very wet. The water runs off the ice in some places just like rain. I try to find a place where it's not too wet and roam around looking for mussels. I walk around all over the place when I'm under the ice. You have to be careful that the water doesn't come up and trap you while you're under the ice, and you have to be sure you can find your way back to the hole before the tide comes in.*

## Birthday Card

FIVE YEARS AGO this month, in April, 1970, CANADA TODAY/D'AUJOURD'HUI began its modest career. It has since grown in size and circulation (though not enormously), and our basic purpose remains the same: to tell the citizens of one complex country about the complexities of another. Good fences make good neighbours, and a good international fence is high enough for privacy and low enough for easy conversation. Birthdays and conversations are best indulged in with friends, and we feel particularly close to the 45,000 United States citizens to whose homes CANADA TODAY/D'AUJOURD'HUI goes each month.

We wish ourselves many happy returns.

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# CANADA

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