



# **THE NIGHT THAT NATURE ROARED**

**From  
The  
PRESS**

**De  
La  
PRESSE**

**AUGUST 1979**



Environment  
Canada

Environnement  
Canada

Atmospheric  
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# Twister toll in \$millions

Toronto Star special

**WOODSTOCK** — Still reeling from last night's five minutes of horror, tornado-shattered southwestern Ontario pleaded today for massive government aid as a disaster area.

Hit-and-run twisters slashed through Woodstock and surrounding communities, killing at least two people, injuring more than 130 and leaving hundreds of homeless.

Late this morning the Ontario cabinet declared the region a disaster area.

In one 15-block area of southwestern Woodstock, 75 homes were destroyed and 250 badly damaged, along with eight factories.

No one could estimate the destruction in millions of dollars.

A government official suggested the cabinet would go beyond a promise by Tom Wells, the intergovernmental affairs minister, of dollar-for-dollar aid to every community that sets up a relief fund.

## Surveys havoc

Environment Minister Harry Parrott flew here to survey the havoc in his riding and confer with Woodstock Mayor Wendy Calder, who asked Queen's Park to proclaim her city a disaster area.

Three howling, black tornadoes, spinning at 120 miles (200 kilometres) per hour, blasted through Woodstock and surrounding communities about 7 p.m. while most of the victims were at the dinner table.

Power lines snapped and blackouts hampered police searching the rubble for more victims.

The "monstrous, swirling, black cloud," as eyewitness Mark Bourrie of Woodstock described it, even rolled over a big moving van and dumped a trailer on the hood of a smaller truck.

## Van pounded

William Ozra Snyder, 51, of R R 3, Nor-

wich, was killed when a tornado sucked up his van, then pounded it into a field north of Burgessville.

Mrs. Corrie Ryksen, 33, died when her house collapsed in the Burford Township village of Harley.

There were reports of three other deaths in Hickson, Oxford Centre and New Durham, but Ontario Provincial Police could not confirm them today.

Commissioner Harold Graham dispatched two OPP helicopters from Toronto to survey the widespread destruction and decide whether reinforcements were needed to search through debris and fend off looters.

Chaos reigned in the city and countryside, with little co-ordination of operations and poor communications because of toppled power and telephone lines.

The OPP dispatched a huge tractor-trailer from Toronto to act as a communications centre for the whole area.

Graham also sent in 48 OPP reinforcements and appealed to people to stay away from the nightmarish scenes unless they had to be there.

## Awesome swath

Woodstock General Hospital became the emergency centre for the whole area. More than 130 people were treated for injuries. About 30 of them were kept in the hospital, including a baby and 10 older children.

Three elderly patients were reported in critical condition.

Volunteers swarmed to the hospital to help make beds, comfort victims awaiting treatment or assist in any other way they could.

Every ambulance from London to Kitchener was pressed into service as rescue workers clambered over uprooted trees and unrecognizable rubble looking for trapped survivors by moonlight and flashlight. The emergency operation was also hampered by downed telephone lines.

The hit-and-miss tornadoes chopped an awesome swath of destruction up to half a kilometre wide wherever they touched down. Then they would rise only to strike again in a new spot.

In southwestern Woodstock, hundreds of houses and other buildings were damaged.

Three separate twisters ripped off scores of roofs in the dinner hour.

Southside Public School and St. Patrick's Separate School were badly damaged. A Dominion store on Ingersoll Rd. lost its entire roof. Some houses were blown off their foundations.

Cars were overturned or smashed by big trees that had been plucked out by the roots.

Trees left standing were festooned with debris and shreds of clothing and bedding.

In Vanessa, a village of about 100 in the rich tobacco country 35 kilometres (22 miles) south of Brantford, at least a dozen stone and brick houses worth more than \$100,000 each were levelled to the ground.

Vanessa's other houses were badly damaged, but police said everyone apparently got out alive to spend the night with friends and relatives.

The worst damage at Vanessa appeared to be on Gerald Dierick's 200-acre tobacco farm, with the wreckage of his buildings

Continued on page 2

Suite à la page 2



and machinery scattered across the \$1.5 million property.

Looting was reported in several of the devastated areas. Gordon Finlay of Royal Insurance said his firm has sent teams to Woodstock and

Simcoe areas to assess damage.

He said tornado and other windstorm damage is generally covered by most home and auto policies.

Globe and Mail - 8/8/79

# Villages flattened, more than 100 injured 3 die in Woodstock- area tornado

Special to The Globe and Mail

WOODSTOCK — At least three people were killed, two were missing and many others were injured when a tornado touched down in this Oxford County community last night, tearing apart the southern part of the city and smashing nearby villages.

Police were conducting a door-to-door check in the damaged area. Twenty-six people were kept overnight at Woodstock General Hospital and at least 120 others were treated for minor injuries.

Hospital comptroller Arthur Boghtflower said all staff had been called in and the hospital worked for two hours on emergency power during the storm. All ambulances from London to Kitchener were pressed into service to handle the injured.

The twister swung in a C shape, striking a 15-block area in the southwest corner of Woodstock but leaving much of the rest of the town undamaged, although telephone and power wires, plus downed trees, choked many streets.

Police found one badly mutilated body in what was left of a farmhouse near Burgessville, a community south of Woodstock that was hard hit. The police said they could not identify the body because of its condition. Others were found dead in New Durham, near Brantford, and Oxford Centre,

south of Woodstock. A 16-year-old and a baby were reported missing north of Woodstock.

At Oxford Centre, a community of 100, Angus Mowat lost his house and two cars to the storm.

"The village was wiped out," he said. "I've never seen anything like it."

The hamlet of Vanessa was also flattened and the area for 10 miles around the village of Hickson suffered severe damage.

The storm centre was just north of Woodstock, but communities in the area bordered by Woodstock, Simcoe, Brantford and Tilsonburg were affected.

Delores Sibley of Woodstock heard the rolling thunder and headed for her basement with her family. Minutes later she emerged to find her house flattened.

"I couldn't stop screaming because I was afraid we would get trapped in the basement," she said. "All of the windows came crashing in and we could hear trees hitting the roof. It was gone when we came outside."

On the street, live wires flared and spat sparks across the pavement.

Large blocks of Southwestern Ontario were blacked out when the storm knocked out Ontario Hydro's main transmission line to the area.

A Hydro spokesman said the main line, which runs from Hamilton to Buchanan

station near London, was hit about 6:30 p.m. The station feeds smaller stations in surrounding Middlesex, Elgin and Oxford counties.

Power was restored to almost all customers about 3½ hours later when power was rerouted, but about 2,000 residents in Oxford were expected to remain blacked out until this morning.

In the village of Kelvin, near Brantford, most large trees had been uprooted and one wall of the United Church was knocked down. Other communities reported similar damage: rooftops ripped off, buildings reduced to rubble and cars and trucks being tossed around in the wind like toys.

The junction of Highways 401 and 59 was closed for several hours after the high winds left a tangle of cars and trucks in the roadway.

At Hobart Brothers of Canada Ltd., just south of the junction, workers clung to steel girders and the concrete walls when the winds hit. "I was hanging on to the guy next to me for dear life," one worker said. Although the roof was ripped off and the second-floor brick crumbled, no one was hurt.

In Hickson, north of Woodstock, Dorothy Middleton said she dove into her bathroom just as the door and front window of her home exploded.

"I really didn't have any idea what happened," she said. "I knew something was happening because the house was falling apart. It was like a bomb."

Mary Fulton and her family emerged from their basement in Woodstock to find all the windows of their house blown out and a huge chunk of the roof missing.

Across the street, three homes were flattened. Furniture and cars were littered across a nearby field.

Ken McLelland, who lives near Burgessville, saw the storm coming and his family of six headed for the barn where 60 head of cattle are kept.

The storm tore away the house and flattened the barn, but the family escaped injury because of the high barn foundation. After the storm passed, the family fled to town, driving across fields when they could not get through rural roads.

"The cattle were alive when we left. I don't know what will happen to them. Maybe the neighbors will help," Mr. McLelland said at Woodstock General Hospital.

He feared the animals would panic and trample each other in the bottom of the barn where they were trapped. Other farmers were forced to kill their injured cattle.

In Woodstock, about half way between London and Kitchener just off Highway

Continued on page 3  
Suite à la page 3



401, City Council was meeting when the tornado touched down and the meeting continued even though the lights went out. Councillors learned of the storm from a reporter.

The Church of the Nazarene in Woodstock was badly damaged and three schools were reported to have been hit hard. A supermarket on old Highway 2 was torn apart and the parking lot was littered with groceries. Late last night there had been no looting but police were on the lookout.

Traffic was either slowed or brought to a halt in much of the community by downed wires, poles and trees. Several cars were overturned on streets and in driveways.

Police blocked many thoroughfares to give Hydro and telephone crews a chance to clean up and restore service.

Brenda Swears was visiting a friend when the tornado hit at the dinner hour.

"My friend (Mrs. Barry Scott) went to the window and said for us to come and see this cloud swirling around," she said later last night. "Her husband said

Oh, yeah, there's three or four of them out there doing that,' but after it was all over and he went out to see the damage, he believed it."

Brenda, 16, lives in the east end of Woodstock, which escaped most of the damage. Last night she described the scene as "a lot of disaster."

Both the Catholic and public primary schools were flattened, she said, and the storm wiped out Southside Park, a recreation area. It also tore through a new housing development in the south side of the community, Innis Place, injuring occupants of some of the houses.

Evelyn Brown of West Hill, returning home from London with her husband Bill, said Highway 401 was littered with bits of trees and fencing, and she saw three transports overturned. She said she was surprised there were not more accidents.

The tornado was not expected by weather officials in the area, even though the Ontario Weather Centre at Malton had issued a tornado warning for Toronto six hours earlier.

The Toronto bulletin, at 12:55 p.m., came as the warm front of yesterday's storm began passing over the city, when airport weather officials spotted funnel clouds several thousand metres from the ground.

No sign of a tornado, however, was spotted when the storm's cold front moved over Southern Ontario in the early evening, and radar soundings indicated only that a severe thunderstorm was approaching.

Norman Barber, supervisor of the Ontario Weather Centre, said in an interview last night that the tornado warning for the Toronto area had been cancelled at 1:50 p.m., after the warm front passed by safely.

Later, when the cold front moved in from the northwest, residents of Perth, Waterloo and Oxford counties were only told to expect heavy rain, hail and winds gusting to 75 kilometres per hour.

"We have a problem here," Mr. Barber said. "We like to have some confirmation of a tornado before we start throwing the word around. I tried to call the OPP in Woodstock to

find out if there were any damaging winds, but I couldn't get through. All the other OPP stations were on the periphery of the storm.

"Unfortunately, it's almost impossible to tell from radar echoes whether a tornado is in the area. Sometimes all we get is a big blob indicating some tupe of major storm."

Floyd Rader, a meteorological technician at the London weather office, said officials will not know how severe the tornado was until the damage can be assessed. Tornadoes occur when warm, moist air on the ground is drawn upward by cooler, dry air higher in the atmosphere, he added.

"It happens pretty quickly. We still don't know just how fast the winds were or whether it was a major tornado."

Mark Bourrie of Woodstock considered it a major storm when he saw a "monstrous swirling black cloud. As it moved closer we could see shingles, branches and birds being sucked toward the centre," he said. Several smaller funnels touched the ground as it passed.

Toronto Sun - 8/8/79

# Killer twisters strike!

Tornadoes ripped through several southwestern Ontario communities early last night, killing at least three and spreading massive destruction.

Police in several communities reported many injuries in areas near Tillsonburg, Woodstock, Brantford, Simcoe, New Durham, Oxford Centre and Waterford.

Late last night, police in those areas were still sifting through debris, downed power lines and trees scattered by the tornadoes.

Police said one person was killed at Oxford Centre, one near Brantford and another at New Durham. There were no details available on the deaths. Dozens of others were reported injured.

A twister devastated a large area of Woodstock about 7 p.m., snapping off trees and hydro poles. Eyewitnesses said homes were levelled, cars tossed around and roofs blown off.

A twister also touched down briefly in Brantford and nearby Vanessa.

In addition to the three deaths, there was an unconfirmed report of a death in Vanessa.

Haldimand-Norfolk regional police said the Waterford area near Nanticoke was hit by a tornado that flattened homes, blew in storefronts and knocked down trees and hydro poles. Only minor damage was reported in nearby Hagarsville.

Late last night, regional cops were slowly fighting their way into beleaguered Waterford past the downed trees and hydro wires to help locals with the cleanup.

In Waterford, a fireman said it will be some time before a damage estimate is available but "it's hurricane-force stuff here."

Deborah Walker of CKDK Radio in Woodstock said she and other staffers cowered in the newsroom watching as the tornado thundered past within 20 feet of the station while cutting a wide swath through the southeastern part of the city.

"You couldn't even begin to estimate the



damage," she said. "A lot of buildings and homes were ripped down. A church was torn down."

"I saw a funnel cloud come in," said OPP Cpl. Ron Thompson in Woodstock. "I could see water falling down and debris being sucked up ... The city called us for all the help we could give them."

Shortly after the twister moved out, John Deboer of Woodstock said "hundreds of people were out sightseeing."

"There are quite a few trees down over the streets," he said.

"There were some fires here and there. It's a real mess. There are hydro poles snapped off all over the place."

Iris Atkinson of Vanessa said last night "there are hydro lines down everywhere with trees and greenhouses uprooted. We haven't heard of anyone hurt so far."

Vanessa officials reported some people were struck in the face by glass and one person suffered a broken leg.

Constable Craig said the huge storm caused "very extensive damage to property."

CKDT Radio worker Craig Pepplar in Tillsonburg said a tornado touched down at the village of Bright, cut through the southeast corner of Woodstock and blew through the villages of New Durham, Vanessa and Waterford.

"Buildings were blown right in, houses were blown down and the (Highway) 401 is littered with cars and trucks, and so are the fields around the 401," he said.

London OPP said Highway 401 was closed near Woodstock because of downed power lines after the storm disrupted traffic and caused numerous accidents.

Earlier, two children were injured when lightning struck at Chinguacousy Secondary School in Peel region. Both were conscious when taken to hospital.

Toronto Star - 18/8/79

# Twister

An ordinary tornado generally packs more punch than an atomic bomb, as residents of Woodstock can testify. Southwestern Ontario is the worst tornado area in Canada.

By Hanoch Bordan Toronto Star

Of all the furies of the skies, the tornado is the most sudden, most frightening, most devastating and the most awesome — as the people of Woodstock found out last week.

Its cumulative fury is such that science can't exactly estimate it. But most meteorologists agree that even an ordinary "garden-variety" thunderstorm packs more punch into a concentrated area than an atomic bomb, minus the nuclear effects.

Since this the most violent of storms strikes so suddenly, so often without warning, its effects are doubly terrifying.

Eyewitnesses often describe it as "a monstrous swirling black cloud" or as "a

chimney of clouds" that can pluck giant trees by the roots and send them flying or lift cars, even trucks, buses and streetcars up into the air.

A tornado is characterized by "uncanny blackness" — a black funnel of spinning winds roaring down, rotating at 100 to 300 miles an hour, from clouds as high as 60,000 feet. It can cut a swath from a few yards to a mile. It can last a few minutes or hours. And as it comes howling down, it drowns out human screams for help.

## More in the U.S. than in Canada

The tornado that struck the Woodstock

area — killing two, injuring 130 and causing more than \$20 million damage — probably had swirling winds in the range of 200 to 250 miles an hour, says Theodore Fujita, University of Chicago professor and acknowledged world authority on tornadoes.

There was so much havoc that Woodstock and Northern Oxford County are barely emerging from its devastating effects. It took an all-out community effort to clear away the rubble and fallen trees. It has taken more than a week to restore phone service, that too to only 90 per cent of the residents, in the 60-mile (100-kilometre) corridor the storm swept across.

Fujita says that southwestern Ontario is actually "the worst Canadian tornado



area," along with the Manitoba-Saskatchewan prairies.

Gordon Gee, this area's chief meteorologist, agrees that we live in "tornado country."

Tornadoes are five times more prevalent in the United States and Canada than anywhere else in the world because of the peculiar geographical and meteorological conditions of the continent, which is relatively flat in the centre, allowing warm moist air from the Gulf Coast to come into contact with cooler air from the Canadian north.

Tornadoes form from "rotating thunderstorms," Fujita says. And the rotating motion causes air to rush into the centre.

## Weather office had issued a warning

The dynamics of the atmosphere can be compared to an ice skater turning with arms outstretched and then suddenly pulling them in close to the body to spin swiftly. The same effect can be seen with water rotating when it goes down a bathtub drain. Rotating thunderstorms are then "like an upside-down bathtub," Fujita says.

"Ideal tornado weather" is moving into Metro and southwestern Ontario this weekend again, with warm moist air from the United States coming in to end the current cold spell.

This produces the kind of weather conditions that breed the kind of thunderstorms that can spawn tornadoes. But the presence of such conditions doesn't mean there'll be one.

When the weather office sees the possibility of severe thunderstorms, hail or tornadoes hitting an area in three to six hours, Environment Canada issues a *severe weather watch* to notify people "that something might happen."

The "watch" is cancelled if no storm develops. If severe thunderstorms, perhaps accompanied by tornadoes, are "either occurring or expected within the hour," a *warning* is issued.

Although a "watch" would usually be for a large area, a "warning" is localized as much as possible.

In the case of the Woodstock tornado, a "watch" was issued at 3.40 p.m. and a "warning" at 6.15 p.m. There was, however, no mention of tornadoes.

One tornado touched down at 6.30 p.m. and the other at 6.50 p.m.

To avoid panic, Environment Canada does not issue a "warning" unless a tornado is actually identified on radar — only about one in five shows up on the screen — or someone actually sees one.

Gee says that 30 minutes is "close to the average warning time" for any weather service in the world.

The problem is that tornadoes are "very capricious. You can't predict them. They may touch down in a matter of seconds. All you can do is detect rather crudely those areas that are suspect."

Radio stations are asked to broadcast the warnings. But that has limited value, Gee admits, because no one can pinpoint exactly where a tornado may strike and, even if there is a visual sighting, no one can predict how long the tornado will stay on the ground or if it will maintain its course.

Tornadoes come in all shapes and sizes; some touch down for only minutes, others can last hours. Their swirling winds can be anywhere from 100 to 300 miles, although some meteorologists estimate them as even higher.

On average, there are about 675 tornadoes in the midwest U.S. each year, killing about 120 people and causing about \$1.5 billion damage, says Fred Ostby of the U.S. National Severe Storms Forecast Centre in Kansas City.

There are no official records of tornadoes in Canada. But, according to meteorologist Mike Newark, who has made a special study of the subject, there were 77 last year, 44 of them in Ontario.

But this may be just the tip of the tornado iceberg in Canada, says Newark, because the only time anyone knows there has been a tornado is when one is seen by someone. And since the U.S. is 7.5 times more settled than Canada, he calculates the frequency of tornadoes in Canada at about 75 per cent that of the U.S.

"Easily the worst in Canada," Newark says, was the 1912 tornado that hit Regina killing 30 people.

## Uprooted home and blew it off

The worst in American history was in 1925 when 689 people died in Missouri, Illinois and Indiana.

One of the most memorable in recent years was the tornado that ripped the roof off a curling rink in Windsor in April 1974, killing 9 and injuring 30. That was one of series of 148 tornadoes that buffeted nine American states and Ontario, killing 337 people.

In the 1974 Windsor tornado, the sound of the whirling wind was described by someone as the same as that of "10,000 freight trains."

In 1972, the Maniwaki, Que., a mother and son were killed when their 50-foot mobile home smashed against another trailer, 250 feet away.

In 1972, four Jacksonville, Fla., children escaped injury when the tent they were in was tossed by a tornado 350 feet away over the roof of their house.

In 1975, a Georgetown couple miraculously escaped injury when their car was lifted five feet in the air, spun around and thrown into another car.

In 1977, a couple was killed when a tornado tore their frame home off its foundations and carried it 150 yards down the road.

In last week's tornado, a car was slammed through the garage wall, into the kitchen of the house and then dumped in the backyard swimming pool.

The day after the Woodstock storm, a tornado hit Regina, causing \$11 million damage.

In 1792, in the first tornado Newark has been able to find records of in Canada, the twister cut a swath through a forest in the Welland area that did the residents a favor. They built a road there and named it simply "Hurricane Rd.," which still exists.

A couple of centuries before that, in 1577, in Bungay, Suffolk, England, a tornado ripped through the middle of a church during a Sunday morning service, killing two kneeling men. It was described by eyewitnesses as "a black devil in likeness" and a "wonderful example of God's wrath."

According to Thorn Won, of Environment Canada, the chances of a tornado hitting any one location are about 1 in 10 million, or, to put it another way, there is a chance that there will be 2 per year in every 10,000 square miles.

In the unlikely event that a tornado would hit a large city like Metro, for instance, the chances are that the buildings would remain standing but the windows would be blown out, he says.

As for the CNE tower, the worst that could happen is that part of its mast may go but its structure would stand intact.

Won says he's doing a study for the Atomic Energy Control Board on safety standards for nuclear power stations to ensure they're "tornado-proof."

They already are, say spokesmen for Ontario Hydro and the Atomic Energy of Canada Ltd.

Hugh Irvine, Hydro's manager for nuclear design and development, says that "although in the past, tornadoes weren't considered as thoroughly as they're today," the design of our nuclear stations is such that they can withstand any force that a tornado could conceivably produce.

The concrete structures at Pickering, for instance, can withstand a missile of 12,000 pounds going at 400 m.p.h. on the roof and 1,000 m.p.h. on the walls, he says. "There's lots of protection there."

About the only sure thing that can be said about a tornado is that it is unpredictable.

Although there is a loss of air pressure in the centre of the tornado, the major



damage comes because of the high winds which, because of their high speed, can actually suck people out of buildings.

## What to do in a tornado

And since winds can lift a car off the ground, "all surface transportation must stop," when there's storm warning, Fujita says.

Fujita feels there should be "more public education" in southern Ontario of what to do in the event of a tornado

One should keep away from arenas, because roofs can easily come off, imperilling the structure, as happened to the Windsor curling rink.

In a large building, one should keep away from windows and go to a small room in the centre of the floor; a bathroom is ideal.

If you're on the road, the best advice is to get off it and seek shelter, preferably in a strong building but if necessary, in a ditch or culvert. But you shouldn't be in a location where your car can be blown onto you. If it's also raining, you should also look out for the anger of flooding in ditches.

In private homes, get into the basement, in the centre if possible, or in a closet or under a stairwell, not only to avoid missiles but because these places are structurally the strongest.

These are all good rules, Gee agrees, and gives them himself. But he points out that in the Woodstock tornado, one woman who did take refuge in a closet was killed. In another case, a car fell into a basement and could have killed anyone who was there.

These precautions give the best chances of survival, he says. "But nothing is guaranteed. We're really dealing with something made by God."

# Tornado's a twister, hurricane a typhoon

**Tornado**—The most violent and unpredictable of storms. It forms out of giant thunderstorms and has rotating winds up to 300 miles a hour. Can last a few minutes or hours. Erratic.

**Twister**—Another name for tornado.

**Waterspout**—A tornado over water, usually not as strong.

**Hurricane**—A giant tropical storm hundreds of miles wide, with winds in excess of about 75 m.p.h. Easily trackable by forecasters.

**Typhoon**—Name used in the Pacific for a hurricane. Known as willy-willy in Australia.

**Cyclone**—A large scale storm, usually in winter. But the term has been used inaccurately and colloquially when people mean to say hurricane or tornado.

**Whirlwind**—A rotating mass of air, less violent than a tornado, usually over open or desert country, known also as Dust Devil or Dust Whirl.

Globe and Mail- 9/8/79

## More tornadoes likely would hit if not for cool Great Lakes wind

By WAYNE GOODING

If it weren't for the Great Lakes, Southwestern Ontario would probably be hit by many more tornadoes than the dozen or so that touch ground in the area each year.

Pat Pender, the officer in charge of the Ontario Weather Centre at Toronto International Airport, said in an interview yesterday that cool air off the lakes tends to protect the area from tornadoes by inhibiting the buildup of the turbulent masses of warm and very humid air associated with the destructive tornadoes.

"A tornado is basically a violently rotating column of

air below a thunderstorm," Mr. Pender said. "There's a potential tornado in any major thunderstorm."

"What happens is that a jet stream moving at up to 300 nautical miles an hour high in the atmosphere draws the humid air violently upward. The air condenses as it moves upward, forming the thunderstorm, and if the air is turbulent enough as it rises, it can produce the tornado."

He said that tornadoes are "small-scale things," which can occur in Southwestern Ontario between early April and late fall. A tornado rarely lasts more than 30 minutes, its destructive centre is usually less than one kilo-

metre wide and it travels a path that can be as small as a few metres or as big as dozens of kilometres, Mr. Pender said.

He said Tuesday's tornado in the Woodstock area came at the end of a day that saw two violent storm systems blow over Southern Ontario.

He said that the first, which did not develop into a tornado, originated around Sault Ste. Marie and travelled down through Georgian Bay and the Metro area before dissipating over Lake Ontario.

"The second was an explosive development that got going at about 6 p.m. over

Perth, Waterloo and Oxford counties," he said.

A severe-weather watch was issued for the three counties earlier in the afternoon and later was changed to a severe-weather warning about 45 minutes before the weather centre had first reports that a tornado had touched ground at about 7 p.m.

He said that the centre was unable to warn the area about the tornado because telephone lines already had been blown down.

Mr. Pender said Environment Canada introduced a tornado warning system in Ontario for the first time this year.



Continued from page 6  
Suite de la page 6

The system includes a network of weather offices that supply data to central offices like the Ontario Weather Centre, one of six major weather stations in Canada, and about 2,000

volunteer weather watchers across Ontario who have been trained to detect weather systems in the making. The central offices issue "severe weather watches" and "severe weather warnings" based on the information collected from these sources.

Tuesday's tornado was the first one in Southwestern Ontario to kill someone since 1974, when a tornado

touched down in the Windsor area. Eight people were killed when that tornado ripped apart an arena during the middle of a curling bonspiel.

Vancouver Sun - 9/8/79

## Tornado phone alert unanswered

WOODSTOCK, Ont. (CP) — Environment Canada says it tried to warn radio station CKDK Woodstock that a severe storm would hit the city about 30 minutes before a tornado ripped through the area Tuesday, killing two persons and injuring about 130 others.

Gordon Gee, senior meteorologist at Toronto International Airport, said today

the office issued a severe weather warning at 6:15 p.m. Tuesday, then tried to telephone radio station CKDK in Woodstock, but could not get a long-distance connection.

He said his office did not know that the storm would turn into a tornado when radar showed there was a huge storm mounting at 6 p.m., but minutes later it issued the warning which predicted severe

thunderstorms and winds of up to 75 kilometres an hour, then tried to advise radio station.

Brad Finch, a spokesman for the Environment Canada bureau in London, Ont., said his office also tried to telephone but failed to get through to the radio station.

CFTO CTV National News 14/8/79

HARVEY KIRCK: THERE WAS NO WARNING WHEN A SEVERE WINDSTORM HIT REGINA LAST WEEK. ENVIRONMENT MINISTER JOHN FRASER SAID TODAY THAT IT IS AN INTOLERABLE SITUATION, AND HE BLAMED IT ON GOVERNMENT RESTRAINT. MICHAEL BENEDICT REPORTS.

BENEDICT: THIS IS THE DAMAGE CAUSED BY THE 117-KILOMETRE-PER-HOUR WINDS THAT HIT REGINA LAST WEDNESDAY. MOBILE HOMES WERE FLIPPED OVER, AND ROOFS RIPPED OFF DURING THE 20 MINUTE STORM THAT CAUSED MILLIONS OF DOLLARS WORTH OF DAMAGE. BECAUSE REGINA HAS NO WEATHER RADAR SYSTEM, THE STORM HIT WITHOUT WARNING. THERE HAVE BEEN PLANS FOR YEARS TO PROVIDE THE CITY WITH SUCH A WARNING SYSTEM, BUT GOVERNMENT CUTBACKS HAVE KEPT THOSE PLANS ON THE DRAWING BOARDS. FRASER SAYS THAT'S NOT GOOD ENOUGH, AND IF HE HAS TO DEMAND MORE MONEY, HE'LL DO IT.

FRASER: FRANKLY, WHEN YOU CAN'T..WHEN YOU CAN'T WARN A COMMUNITY THAT THEY'RE GOING TO BE HIT WITH A STORM LIKE THAT, THEN WE'VE GOT INADEQUATE WEATHER SERVICES, AND I JUST FIND THAT INTOLERABLE

BENEDICT: WITH A PROPER WEATHER RADAR SYSTEM, THE PEOPLE OF

REGINA COULD HAVE BEEN TOLD ABOUT THE STORM AN HOUR BEFORE, AND FRASER PROMISES LAST WEEK'S FAILURE TO WARN WILL NEVER HAPPEN AGAIN.

MICHAEL BENEDICT, CTV NEWS, OTTAWA.



## LACK OF REGINA WEATHER WARNING TO BE INVESTIGATED

**HARVEY KIRCK:-** There'll be a federal investigation into why Regina didn't get sufficient advance warning of Wednesday's tornado. The storm caused \$10-million in damage. Wayne Mantika reports.

**WAYNE MANTIKA:-** The storm, with wind gusts peaking at 117 kilometers per hour, hit suddenly, without even a weather warning having been issued by Environment Canada. Regina weather forecasters were recently transferred to Winnipeg in a federal government cost-cutting move. Although the remaining weather presentation technicians saw a storm coming, they did not have the authority to issue a weather warning without checking with the Winnipeg weather office first. By then it was too late.

**RAY O'BRIEN:-** Well, it's the policy all across Canada that weather warnings are only issued by professional people. Now, if he had seen a tornado himself, you know, if he actually had seen one, he would certainly be authorized to take it on his own to issue a warning, phone the media.

**MANTIKA:-** The Winnipeg weather office finally did issue a severe storm warning for Regina, about 10 minutes after the storm had passed. By that time the sun was shining once again and Reginans were out surveying the damage to their homes.

Wayne Mantika, CTV News, Regina.

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Toronto Sun - 12/8/79

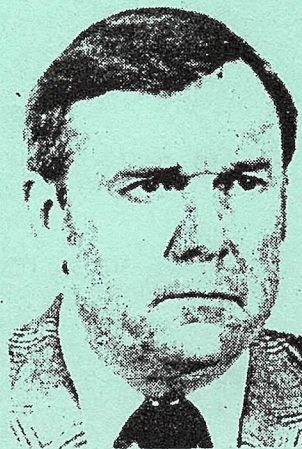
# Answer blew in the wind

**REGINA (UPC)** — Saskatchewan Premier Allan Blakeney said he couldn't believe his ears when he heard that any weather warning for Regina, struck by a tornado Wednesday, has to be approved in Winnipeg.

Ray O'Brien, officer in charge of the Regina office, confirmed that Regina asked Winnipeg for permission to declare a weather warning Wednesday but word did not come back until about 6:30 p.m., long after the storm had passed over Regina.

The Regina weather office was a full forecasting office until April 1, when government spending cuts reduced its size. Of eight forecasters, only two remain. The rest, and support staff, were transferred to Winnipeg.

The federal environment department announced it would conduct a routine investigation into the Regina storm.



**ALLAN BLAKENEY**  
Tornado tempest



THE DAY AFTER THAT TWISTER SNAKED THROUGH THE AREA, ANOTHER DESCENDED ON REGINA. AND TODAY IN OTTAWA, ENVIRONMENT MINISTER JOHN FRASER ADMITTED THAT INADEQUACIES AT THE WEATHER OFFICE WERE RESPONSIBLE FOR THE LACK OF WARNING.

THE SEVERE STORM PACKING WINDS OF UPWARDS OF 70 MILES AN HOUR HIT THE REGINA AREA WITHOUT WARNING LAST WEDNESDAY, CAUSING HEAVY PROPERTY DAMAGE. THE CITY HAD LITTLE WARNING OF THE SEVERITY OF THE STORM UNTIL IT WAS TOO LATE. LAST YEAR THE FORMER FEDERAL GOVERNMENT MOVED WEATHER FORECASTERS AND RADAR EQUIPMENT FROM REGINA TO WINNIPEG IN AN EFFORT TO CUT GOVERNMENT COSTS. HEADING INTO A CABINET MEETING TODAY, ENVIRONMENT MINISTER JOHN FRASER ADMITTED THAT THE LACK OF NOTICE TO REGINA IS DIRECTLY LINKED WITH THE LACK OF EQUIPMENT THERE. HOWEVER, FRASER DID NOT SAY WHETHER HE WOULD TRY TO PERSUADE HIS CABINET COLLEAGUES TO PROVIDE THE MONEY FOR THE NEW WEATHER RADAR DEVICES FOR THE SASKATCHEWAN CAPITAL. ENVIRONMENT CANADA OFFICIALS HAVE DENIED A CHARGE BY PREMIER BLAKENEY THAT HIS CITY WOULD HAVE HAD PLENTY OF WARNING ABOUT THE STORM HAD THE WEATHER FORECASTING SERVICES REMAINED IN REGINA.

PICK MILLER, NEWS RADIO, PARLIAMENT HILL.

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Toronto Star - 9/8/79

## Now giant storm rocks Regina

REGINA (CP-Special) — Residents are cleaning up damage today after a tornado-like storm sliced through the city, ripping off roofs, smashing windows and overturning cars and mobile homes.

The 20-minute storm, which struck without warning about 6 p.m. yesterday pounded the city with rain, hail and winds of up to 73 miles (117 kilometres) per hour.

There were no reports of serious injury, although some people were taken to hospital after being hit by flying glass.

Meteorologist Ken Johnson said a twist-er wasn't seen from the airport weather office, "but there were reliable reports of a tornado in the city."

Two schools were heavily damaged and windows of downtown businesses were smashed.

Rudy Horn, manager of a furniture store, said furniture was sucked out onto the street.

Despite pleas by police to stay home, residential streets were choked with curiosity seekers. Streets in several subdivisions were closed until work crews cleared away the mess.

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Toronto Globe & Mail - 15/8/79

## Lack of funds cited in late storm alert

OTTAWA (CP) — Regina was not given advance warning last week of a heavy storm because the Environment Department lacks the funds to purchase the proper equipment, Environment Minister John Fraser says. He told reporters that without the money to oper-

ate expensive radar devices, the department could not always give communities advance warning of approaching storms. "That was certainly the case on the Prairies," he said referring to the 117-km/h winds that hit Regina last Wednesday.



## BLAKENEY WANTS WEATHER OFFICE MOVED BACK TO REGINA.

**HARRY MANNIS:-** Premier Blakeney says Saskatchewan will renew its efforts to get the federal government to move its weather forecasting services back to Regina from Winnipeg. The premier, speaking two days after the tornado which hit parts of Regina, said the weather office must straighten up its procedures to ensure that tornado warnings are issued before storms, not after them. Then, said Mr. Blakeney, the office should get busy on getting better forecasting for Regina and the rest of the province. The premier said there was clear evidence that the quality of forecasting has deteriorated.

Winnipeg Free Press - 13/8/79

# The deadly rain

By Maxwell Cohen

Special to the Free Press

To project the death of hundreds, perhaps thousands, of Canadian and United States lakes from the Midwest to Nova Scotia-Maine is to evoke the image of an ever-threatened ecology, and to question man's ability to preserve the ambient nature which must sustain him.

Hence the recent disclosures that "acid rain" — the result of sulphur-oxides and nitrogen-oxides spewed from great furnaces — has destroyed aquatic life in almost 200 Ontario lakes and probably has damaged as many elsewhere in the United States and Canada, is frighteningly suggestive of a chemical-industrial complex not yet, but potentially, out of control.

The high drama of the recent news is, however, somewhat startling. Suspicions about air pollution have been in the wind for a generation or more and are being studied quite intensively in Europe, while in Canada and the United States, since the late 1960s at least, the Windsor-Detroit area particularly has been under careful observation.

What is new, however, is the awareness that local transmissions of pollutants by air may be less significant than the total impact of long distance dispersion with harmful chemicals carried hundreds of miles and falling upon land and water either in minute solid

form or through being encapsulated in what was once the clear innocence of a raindrop.

### Tall stacks

The paradox emerges that tall stacks were built to disperse fumes in the hope that the assimilative capacity of the skies would lessen injury by spreading the risks through space. In fact these transmissions, moving by now discovered pathways, have destroyed any confidence in a simplistic hope of dilution through distance. And so the long plumes, from Sudbury and its sisters, from plants in Chicago or St. Louis, are now the almost-proven sources of lethal effects on the life of the lakes, not only in the mid-continent area but far to the north, and east to the seaboard as well.

Unlike other airborne pollutants the oxides fall from the clouds as acid rain and "purify" the life out of the waters below. Large bodies such as the Great Lakes or those with certain "buffer" chemical qualities can resist acidity and biological death.

Surprisingly while the scientific data on Canada-United States acid rain may be relatively new, the legal principles of air pollution, as they touch on the responsibility of states damaging each other, is today quite deeply rooted in international law. Indeed, the juridical parents of these modern doctrines are Canada and the United States.

The Trail Smelter case in the late 1920s, investigated by the International

Joint Commission, examined, perhaps for the first time, the responsibility of one country for air pollutants travelling miles downwind to damage the orchard life of a neighbor. For Consolidated Mining and Smelting Co. of Trail, B.C. emitting sulphur dioxide and other chemicals, was found to be the source of horticultural injury in the state of Washington, ten to 20 miles across the boundary.

### Global debate

The principle emerged that no one state may use its territory — industrially, chemically, etc. — in a manner harmful to its neighbor. Two generations later these notions merged into the global environmental debate and were crystallized as a body of respectable "soft" law in 1972 by the Resolutions at the Stockholm Conference on the Human Environment.

That was the year Canada and the United States signed the Great Lakes Water Quality Agreement. By then public and governments were beginning to understand better the inter-fac-ing of air quality and water quality problems. Hence all the work done by both countries after 1972 to "clean up" the Great Lakes embraced the water-air complex as a hard fact of life.

The renewed 1978 agreement states this perception even more emphatically, and with greater clarity, so that both countries now have a precise duty to take account of the impact of atmospheric pollution on water quality and



Continued from page 10

Suite de la page 10

to shape their national control programs accordingly. The day has arrived, therefore, when a broad ecological perspective makes it impossible to separate air, water, land and man's behavior, just as nature perhaps never intended them to be "divided", except for legal definition and physical description.

The long-distance transmission issue, emphasized today by the increasingly detailed findings on acid rain, requires therefore both more precise scientific baselines and clear statements of trans-boundary duties and procedures for the shared, continental air pollution challenge. Hence the present negotiations between Canada and the United States to set up an air pollution control, limitation and compensation system, takes the matter forward to a future of joint duties and the common quasi-management of the continent's trans-boundary, and even more distant, airsheds.

Given the classical United States difficulties, constitutional and political,

of getting a formal treaty accepted, a simple executive agreement is the route of choice. It could be linked to the water pollution language of the magisterial Boundary Waters Treaty of 1909 — as was done to support the Great Lakes Water Quality Agreement — since water and air cannot be divorced. An agreement might set out the obligations of each, establish a common monitoring system, along with joint investigative, research, advisory and dispute settlement mechanisms.

Considering the International Joint Commission's present responsibilities, directly and indirectly, for air pollution along the common frontier, a new international agency may be unnecessary since it would duplicate and doubtless interfere with the operational logic of the water-air interface.

The costs of control will have to be considered leading to acceptable principles that would avoid undue and dissimilar economic burdens on either side with their inevitable resentments. "Let the polluter pay" becomes more

epithet than policy if individual capacities are to be a determining factor.

### Pollution problems

Norway and Sweden have suffered from emissions airborne from Britain and West Germany and acid rains have damaged many of their northern lakes. The Scandinavians among themselves have developed a common legal structure for all pollution problems wherever they arise within the region. These are models to be mindful of in approaching any future Canada-United States system and agreement.

There is no reason for panic, even less for delay. The energy crisis and the prospect of more coal-burning power plants, with accelerated coal-mining programs, together are enough to dismiss those who believe the times call for other priorities. The real issue is not only hard economics. It is lakes and men and survival.

*Maxwell Cohen is past Canadian co-chairman of the International Joint Commission.*

Globe and Mail - 8/8/79

## Great Lakes first on agenda

# Energy gap slows talks on acid rain

By ROBERT SHEPPARD  
Globe and Mail Reporter

OTTAWA — The Canadian Government is taking advantage of a fluke of the U.S. political scene to press for a solution to one of the most serious environmental problems of this century.

Shortly before mid-term elections in the United States last fall a group of senators and congressmen representing northern states forced through a resolution urging the President to negotiate an air pollution treaty with Canada.

The U.S. politicians (many of whom were defeated in the November elections) were acting on local concerns about the effect of Canadian generating plants spewing acid rain across the border.

These local pressure tactics have since snowballed into a full-scale

international commitment.

Last week Canada and the United States formally agreed to negotiate a solution to trans-national air pollution, in particular the acid-rain phenomenon that is devastating thousands of Canadian lakes and has become a priority political issue in this country.

However, those closely involved in the process are not optimistic that an agreement will be concluded quickly, mainly because they doubt that with the present energy problems the political will exists in the United States to tackle expensive environmental projects.

For the time being, both sides are looking at the Great Lakes Water Quality Agreement of 1972 as a starting point on which to base negotiations.

The joint commitment to clean up

water pollution in the Great Lakes is unique among international agreements but there is an important difference between that and a similar agreement on air pollution: the areas that give rise to the problem are not the ones to benefit from the solution.

The areas in the United States and Canada that spew out large quantities of sulphur and nitrogen dioxides — the basic ingredients of acid rain — are the highly industrialized areas of the Northeast: the Ohio and Mississippi River valleys, parts of Pennsylvania and New York as well as Hamilton, Southwestern Ontario and Sudbury. The main recipients are the recreational lake areas in Northern Ontario and Quebec and parts of New England.

And the solution, whatever it is,



will be costly. Scientists have estimated the cost of cutting this type of pollution by 50 per cent at \$5-billion to \$7-billion annually in the United States and about \$350-million annually in Canada.

These costs will be borne in part by the public purse but in larger part by the consumer. Smelters and power companies are the major creators of acid-rain pollution, and any increase in utility bills is likely to have significant political ramifications at the local level.

The simple facts of the acid-rain problem are that the United States produces more than seven times the air pollution produced in this country. And because of the prevailing wind patterns proportionally more of it drifts northward than goes south from here.

At the same time, however, the United States has significantly more stringent emission standards and penalties as well as a different approach to fighting air pollution using the best available technology to contain as much as possible at the source, rather than building high stacks to disperse and dilute the pollution, which has been the

traditional approach in Canada.

Ideally, Canadian officials say they would like to see new U.S. legislation that would limit even further the emission levels in that country. They are therefore hoping to negotiate a treaty rather than an executive agreement (which was concluded in the case of the Great Lakes) because a treaty would directly involve Congress, the legislative branch in the U.S. system.

In return Canada would have to limit its own emissions to those levels and first obtain a commitment from the provinces, which are responsible for environmental matters, that they will enforce significantly stricter standards. A commitment in principle by the provinces that they will abide by whatever agreement is negotiated is a mandatory first step.

There is little international law involving transnational air pollution, but both Canada and the United States signed the 1972 Stockholm declaration recognizing a responsibility to ensure their activities do not cause environmental damage to another country.

In 1941, a U.S.-Canadian tribunal awarded \$78,000 in damages to a group of U.S. apple growers who claimed

their crops were damaged by fumes from a smelter in Trail, B.C. The compensation was in addition to \$350,000 already awarded as a result of diplomatic negotiations, but the bilateral tribunal enunciated the important principle that no state has the right to permit activities environmentally damaging to another state "when the case is of serious consequence and the injury is established by clear and convincing evidence."

Canada is short of sticks and carrots to bargain with on the acid-rain issue and must rely on being able to put forward the view that the devastation of Canadian lakes is not in the long-term interest of the United States.

A possible carrot is that Canada may offer to export more natural gas to the western U.S. in exchange for quick consideration of the air pollution agreement. Those involved in the negotiations say these two issues are not linked in any official way but do not rule out the possibility at some point in the future.

Some Canadian officials feel that nothing short of a massive educational campaign in the United States will galvanize the political will in that country and are considering a lobbying campaign of U.S. and Canadian politicians, as well as

international labor, industrial associations and public interest groups.

On the U.S. side, officials would like to see Canada adopt the best-available technology route, devise some system of liability and compensation (as it stands now U.S. citizens can't sue in Canadian courts but Canadian citizens can bring damage suits in U.S. courts) and increase consultation on new sites close to the border that may be potential risks.

(If Canada adopts the best technology route to trap sulphur emissions at the source, Government consideration will have to be given to building a large loading terminal at an Eastern Canadian port to transship the sulphuric acid byproduct to developing countries where the market is greatest, as recommended in a British consultant's report to the federal Government.)

Environment Minister John Fraser is going to Washington next week to press the issue with his U.S. counterpart but it is unlikely that negotiations will get significant attention until after the presidential election in the fall of 1980. The U.S. Clean Air Act comes up for congressional review in 1981 and officials believe that may be an appropriate time to focus attention on these negotiations as well.

Toronto Star - 31/7/79

## *Sudbury is 'main cause of acid rain,' prof. says*

There has been a great deal of comment recently on the problem of acid rain and the threat this poses to Canadian lakes.

Government opinion suggests that our contribution is less than 10 per cent with the U.S. being responsible for the remainder. I have been

engaged in research in this field for 10 years and it is my view that emissions from the Sudbury area are much more significant in the total picture than current government speculation suggests.

In a research paper published in 1977, Beamish and Van Loon pre-

dicted that the annual change in pH of Lumsden Lake in the Killarney

area would be from 5.2 to 4.8. When this pH change was actually measured the change was found to be very close to that predicted, being from 5.2 to 4.7.

The important point is that this



Continued from page 12  
Suite de la page 12

prediction on an acid related parameter, pH, was made by considering only emissions from the Sudbury area, taking no account of any contributions from the U.S.

In addition to this evidence, if the U.S. contribution to the problem is so great why then are the vast majority of grossly acidified lakes clustered in the Sudbury region?

This letter is not to suggest that acid fallout from the U.S. is insignificant. I am convinced that this source is important and must be controlled.

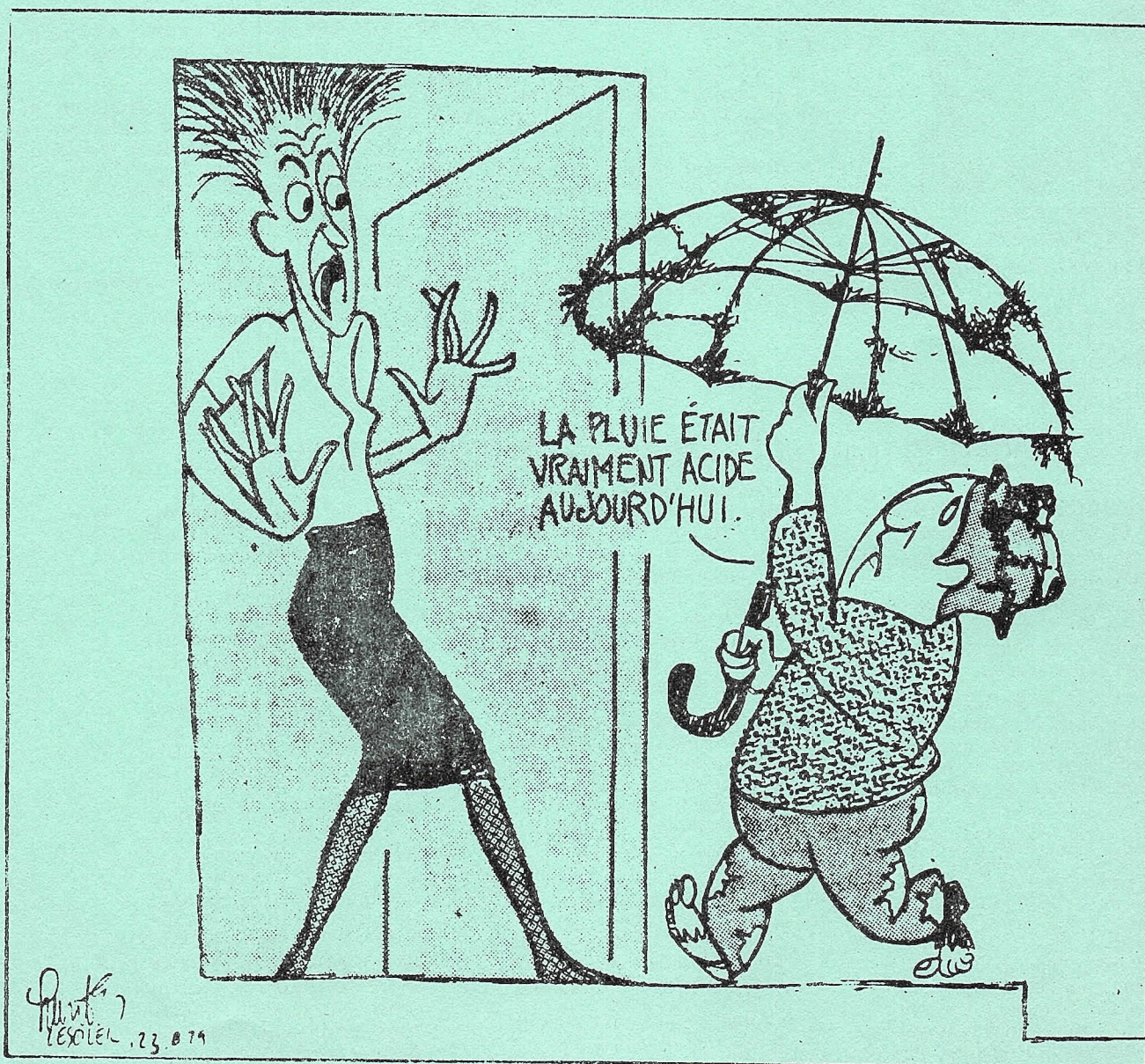
What annoys me is the prevalent opinion that by insisting on a U.S. clean-up of acid sources our problems in this area will be over. Based on my findings, this will obviously

not occur.

In any case, how can Canada demand American action when our government has been very lax in demanding effective clean-up of industry in the Sudbury area?

Prof. JON C. VAN LOON  
Institute for Environmental Studies  
Toronto

Le Soleil, Quebec - 23/8/79





## CANADA-U.S. MOVE

# Big blitz on acid rain



**JOHN FRASER**  
Time is problem

OTTAWA (UPC) — Canada and the United States will begin working toward an accord to reduce acid rain-causing pollutants, Environment Minister John Fraser said yesterday.

Fraser said time was the only problem in saving at least 48,000 lakes in Ontario over the next 10 years. He said a joint agreement will set out methods for pollution reduction and controls.

However, Fraser added, it would be irresponsible for him to set out a timetable for an agreement.

He said both U.S. Interior Secretary Cecil Andrus and Douglas Costle, administrator of Environmental Protection Agency, are anxious to proceed with talks.

The minister said he also assured his U.S. counterparts that the federal government had

the constitutional power to act unilaterally should it fail to reach an agreement with the polluting provinces.

"I emphasized the fact that both countries were polluting each other and that effective control could only be undertaken on a co-operative basis," he told a news conference.

Ontario is the main if not the only polluting province that has caused acid rain to fall on both sides of the international border, Fraser said.

Fraser said officials from his department estimated the cost to Canadian industry to install pollution devices would be roughly \$375 million. The cost to U.S. industry would run between \$5 to \$7 billion.

Globe and Mail - 8/8/79

## Fight acid rain with Loto funds, minister proposes

By **ROBERT SHEPPARD**  
Globe and Mail Reporter

OTTAWA — Federal Environment Minister John Fraser says he would like to see Loto Canada used to combat environmental problems like acid rain.

Mr. Fraser says he hasn't approached his Cabinet colleagues with this idea yet "but if they see it in the paper I'm sure to hear about it."

His suggestion stands on its head Prime Minister Joe Clark's election promise that the federal Government will get out of the lottery business. That is unless the federal Government can wring some concession that provincial lottery funds will go to national environment problems in exchange for the federal withdrawal.

The provinces have already agreed to support

national sports programs out of their lottery funds if the federal Government withdraws, and Sport Minister Steven Paproski said last month that Loto Canada, "a gold mine," will live on but that the federal Government will end its involvement by the end of the year.

Mr. Fraser said yesterday that using Loto Canada funds to help alleviate major environmental problems is "the kind of imaginative, unconventional approach that may be necessary" for problems of this sort.

A group of Canadian and U.S. scientists have estimated it will cost about \$350-million annually in Canada and between \$5-billion and \$7-billion annually in the United States to cut by half the source of acid-rain-making emissions that is killing off the resort lakes in Northern Ontario and Quebec.

"If you can use Loto funds to build hockey arenas in Winnipeg and Quebec City . . . then why not for an acid-rain problem that's devastating us? Surely we can look at a Loto scheme for the kind of problems that affect us all."

(The former Liberal Government pledged to use \$18-million in Loto Canada funds to bring arenas in Winnipeg, Quebec and Edmonton up to National Hockey League standards by the fall. Mr. Paproski said in June shortly after assuming his portfolio that this commitment will be honored, but then later said he is having second thoughts on the subject.)

Mr. Fraser's remarks come on the eve of his departure for Washington today to discuss the acid-rain problem as well as the controversial Garrison diversion project with his U.S. counterparts.



## La pluie acide

# L'Outaouais est une région «immunisée»

par Pierre Culmet

HULL. — L'Outaouais québécois, la péninsule de la Gaspésie et la vallée du St-Laurent seraient les seules régions du Québec capables d'échapper naturellement aux effets de la pluie acide, a déclaré récemment un haut fonctionnaire d'Environnement Canada.

De passage à Hull, la semaine dernière, le Dr Marcel Lortie, directeur du ministère fédéral pour l'ensemble du territoire québécois, a déclaré, en entrevue, que l'immunisation probable de l'Outaouais et des autres régions provient de la composition du sol.

Les roches, la terre et les lacs contiendraient suffisamment de matières «basiques» ou alcalines, comme le calcaire, pour neutraliser les acides transportés par la pluie et la neige, a expliqué le Dr Lortie.

«L'Outaouais est basique; il y a du calcaire et nous prenons pour acquis que la région est moins sensible», a-t-il déclaré.

Cependant, il a souligné que l'Outaouais est située plus près des «smelters» de l'Abitibi et de Sudbury et qu'une augmentation sensible de la quantité d'agents polluants pourrait neutraliser les matières alcalines.

Le sol de la vallée du St-Laurent et de la péninsule de la Gaspésie offre essentiellement les mêmes caractéristiques que celui de l'Outaouais, a dit le haut fonctionnaire, tandis que le reste de la province demeure vulnérable à des degrés variables.

Le Dr Lortie a souligné en outre que des études récentes ont permis de constater que des lacs des bassins des rivières Richelieu, St-Maurice et Yamaska contiennent des taux d'acidité élevés. «S'il y en a dans ces bassins-là, il en existe dans une bonne partie du Québec», a-t-il dit.

En ce qui concerne l'extrême nord du Québec, l'Unghava et le Nouveau-Québec, le Dr Lortie a dit que ces régions reçoivent peu de pollution atmosphérique en comparaison des autres. Mais il a dit qu'il n'est pas prouvé que ces régions ne sont pas menacées du fait que leurs écosystèmes sont beaucoup plus fragiles.

### Soufre et azote

Le phénomène des précipitations acides se produit lorsque les gaz et les fumées à base de soufre et d'azote, évacuées dans l'atmosphère par les usines de traitement des métaux et les centrales de production d'énergie aux carburants fossiles, entrent en réaction avec la vapeur d'eau de l'air et se transforment en acides sulfureux ou sulfuriques, nitreux ou nitriques.

Transportées souvent à de grandes distances par les vents et les courants d'air de la planète, ces gouttelettes d'eau transformées retombent sous forme de pluie ou de neige et affectent surtout des régions qui con-

tiennent un faible taux de matières alcalines. La majorité du territoire québécois présente ce genre de caractéristiques, avec des roches de l'ère précambrienne de type granitique.

Les lacs sont les premiers touchés. Dans un milieu acide, c'est-à-dire sous le seuil de 6,7, sur l'échelle «ph», les poissons, et particulièrement les salmonidés et la truite, ne peuvent plus se reproduire naturellement. Le Dr Lortie dit qu'on soupçonne aussi que les pluies acides peuvent retarder la croissance des forêts, provoquer le «vieillessement» des villes (oxydation des toits de métal, rouille des automobiles) et diminuer graduellement la qualité de vie pour l'être humain.

Mais d'où viennent ces particules à base de soufre et d'azote?

A cette question, le Dr Lortie répond que les deux tiers de cette pollution nous vient des Etats-Unis. «Les grandes émissions de soufre et d'azote, sous forme d'acide, ça nous vient de la vallée de l'Ohio, en partie, et ça nous vient de la grande région de la mégapole entre Boston et Philadelphie, avec des concentrations encore plus fortes du côté de New York».

Il ajoute que certains lacs américains sont si acides qu'on y répand des quantités de chaux (élément alcalin) pour permettre aux poissons de survivre. D'après lui, ces lacs, comme environ 140 autres dans la région voisine de Sudbury, ont atteint environ 4,5 sur l'échelle ph, tandis que l'équilibre parfait se situe à 7 (l'échelle ph varie de 0 à 14 et les chiffres plus petits que 7 indiquent l'acidité).

C'est d'ailleurs au chapitre de la provenance des pluies acides que la lutte à la pollution se complique. «C'est un problème international complexe», a déclaré le Dr Lortie.

«Il faut aussi considérer que nous en envoyons aussi aux Etats-Unis, du côté du Maine, du New Hampshire et du Vermont», probablement des régions de Montréal, et de Beauharnois, explique-t-il.

Il évoque aussi le fait que les normes anti-pollution atmosphérique des Etats-Unis sont plus strictes que celles du Canada. «Qu'est-ce qui obligerait les Américains de rendre leur air plus propre, si nous ne faisons rien?»

Le haut fonctionnaire estime d'ailleurs qu'il est préférable que les deux pays entreprennent des mesures conjointes de lutte et modifient leurs usines de façon semblable, plutôt que de tenter d'identifier qui pollue qui ou quoi.

«Les deux pays, explique-t-il, ont choisi de signer un pacte, en ce domaine, comme dans le cas de la pollution des Grands lacs, parce que la «manière légale» serait trop onéreuse. Sans ce pacte, dit-il, il faudrait que



Continued from page 15  
Suite de la page 15

le Canada dise que telle usine de la Mobil Oil, par exemple, pollue telle région, avec tels effets.

#### Des négociations

Le haut fonctionnaire estime d'ailleurs que les négociations interprovinciales, fédérales-provinciales et internationales commenceront au cours des prochaines semaines et se poursuivront durant l'automne, dans le but de commencer, notamment, à déterminer les normes de contrôles dans les usines. Pour janvier et février 1980, il attend un rapport détaillé de la situation de la précipitation acide au Québec, et il prévoit enfin que les premiers «investissements» seront faits vers 1981 et se poursuivront pendant plus de dix ans.

En fait, le Dr Lortie a déclaré que les gouvernements chercheront à transformer tout le secteur des

usines existantes de smeltage et de production d'énergie qui ont recours au pétrole, au charbon et au gaz naturel.

«Pour une seule usine importante, ça pourrait friser les \$300 millions», a-t-il dit, en ajoutant que la technologie anti-pollution ne sera pas la seule à être mise en place et que le Canada comptera probablement sur les innovations américaines.

«Nous allons essayer de voir comment on peut réduire les coûts et avoir la même efficacité... ou comment augmenter le rendement de l'usine et réduire la pollution», a-t-il dit. On peut comparer cela à ce qui se fait dans le domaine des pâtes et papiers.

En conclusion, il a déclaré: «Les 10 prochaines années, ça va être autour des pluies acides...»

Ottawa Journal - 11/8/79

## Cleaning our air

Environment Minister John Fraser has made a promising start towards an agreement between the United States and Canada on air quality. Without such an agreement, anything accomplished individually by either country is, so to speak, mere whistling into the wind. The interdependence of nations sharing the same continent has never been more vividly demonstrated than in the sudden awareness of the frightening dimensions of air pollution.

“Acid rain” is a journalistic phrase, and it describes only one of a whole continuum of challenges. But the very vividness of the term and the way it has seeped so quickly into the popular and the political consciousness are facts to be fully exploited. Mr. Fraser has shown admirable initiative in doing precisely that.

The encouraging thing about his consultations this week with his American counterparts and Ontario Environment Minister Harry Parrott is the apparent depth of the commitment to action. Mother-

hood statements about improving air quality are as fashionable as were motherhood statements a few years ago about cleaning up water pollution. Though some progress has been made, and the Great Lakes Water Quality Agreement is in place, no one is yet drinking the water of Lake Erie.

But at least there is a sense of urgency and a feeling of resolve. Mr. Fraser is not naive. He knows the difficulties, yet he has determination and conviction in his voice.

The political atmosphere is good. Americans and Canadians are not shouting at each other across the border, each accusing the other of guilt. There is no mutual recrimination because each country (and each state, each province) knows that the guilt is shared.

The Americans of course put more pollutants in the air than Canadians. But, to stay with the “acid rain” problem, the most recent data shows that half the sulphur dioxide in the air over Canada — the cause of “acid rain” — comes from Canada.



The chief villains are smelters, oil refineries and coal-burning power stations — the great suppliers of the life-blood of modern industry. These sources of pollution are not going to disappear, far from it. There was apprehension in Canada when President Jimmy Carter stressed the greater use of coal as an oil-conservation measure. More coal burned in the United States means more air pollution — over Canada.

There should be no delusions over the cost of providing pollution abatement equipment in power stations and smelters. These "scrubbers" are enormously expensive. Mr. Fraser talks of an annual cost to Canada of some \$375 millions for five years; the cost to the United States is estimated at from \$5 billion to \$7 billion.

On top of higher oil prices, these are daunting amounts to be borne by the public. Yet the alternative is unthinkable: thousands of lakes devoid of all life. "The Silent Spring" coming insidiously, inevitably to the 48,000 lakes in Ontario alone. It is a new nightmare. Who except a few Scandinavians even heard of "acid rain" until months ago?

There is no real choice. Though the data remains incomplete and hard measurements are still being produced, there is no reason to wait until the last scientific report is written before deciding upon the principles underlying a joint U.S.-Canada approach. The Interna-

tional Joint Commission provides a ready operational model.

Mr. Fraser has committed the federal government to unilateral action on pollution standards if the provinces are slow to co-operate. Ottawa can claim the constitutional authority to impose such standards, though the co-operation which Mr. Fraser expects is much preferable to the Parliament of Canada acting for the provinces.

Ontario (and other provinces) should be grateful for Mr. Fraser's leadership which makes it easier for Dr. Parrott to take a harder line in imposing more rigorous anti-pollution standards. He can now blame Ottawa's pressure, if a scapegoat is necessary.

The provincial co-operation which Mr. Fraser anticipates would solve a fundamental problem in achieving a joint U.S.-Canada agreement. The United States can legislate and impose national environmental standards. (Receiving Senate approval for an international treaty is another thing.) But there has been some doubt about Canada's ability to achieve a national agreement on the same standards. Crucial as it is, Ontario is only one province. Mr. Fraser has some delivering to do.

But he has his priorities straight, and he should be commended for a willingness to take on a tough, perhaps politically thankless, job. It augurs well for his other awesome responsibility — the Canadian Post Office.

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The Gazette, Montreal - 17/8/79

## *Acid rain said threat to Atlantic salmon*

**ST. ANDREWS, N.B.** — (CP) — Acid rain could pose another threat to the already endangered Atlantic salmon, Dr. Robert Cook, director of the federal fisheries biological

station here, said yesterday. He and George Lindsey, director of the federal environmental protection service, said research, while inconclusive, indicates acid rain has reduced



Continued from page 17  
Suite de la page 17

the spawning capability of several species of fish, particularly salmon, in some New Brunswick and Nova Scotia lakes. Poaching and offshore fishing is already endangering Atlan-

tic salmon stocks. Officials say airborne emissions from power plants and industries in Ontario and the northeastern U.S. are the major sources of acid rain detected in New Brunswick.

Le Droit, Ottawa - 10/8/79

## Pollution causée par la pluie acide

# Ottawa est prêt à agir

par Pierre Oulmet

OTTAWA — Le ministre fédéral de l'Environnement, John Fraser, s'est déclaré confiant, hier, de bientôt pouvoir élaborer avec les Américains un vaste programme d'assainissement des sources de pollution atmosphérique qui sont à l'origine de la précipitation acide.

Au cours d'une conférence de presse, le ministre a déclaré qu'il est encore trop tôt pour connaître les mesures précises qui seront choisies, mais il a évoqué la possibilité d'un «régime de taxation pour la prévention de la pollution.»

«Le coût de la pollution appartient à tout le monde, pas seulement à l'entreprise privée et aux provinces, a-t-il dit, après avoir avancé qu'il en coûtera probablement \$375 millions par année aux Canadiens et de \$5 à \$7 milliards par année aux Américains pour résoudre le seul problème de la précipitation acide, aussi appelée «pluie acide».

Si on n'agit pas dès maintenant, le ministre a dit que «dans 20 ans, 48,000 lacs canadiens ne pourront plus soutenir la vie aquatique». L'eau des lacs devient excessivement acide, les poissons meurent, la vé-

gétation est endommagée et la corrosion s'attaque aux édifices et aux automobiles.

La pluie et la neige deviennent «acide» quand des oxydes de soufre et d'azote entrent en réaction avec la vapeur d'eau de l'atmosphère et créent ainsi une forme peu concentrée d'acide sulfurique qui retombe sous forme de pluie ou de neige. Les oxydes proviennent de la combustion de carburants fossiles comme le pétrole, le charbon et le gaz naturel.

Le ministre Fraser a convoqué cette conférence de presse à la suite de pourparlers qu'il a

eus, mercredi, à Washington, avec le secrétaire américain de l'Intérieur, Cecil Andrus, et le directeur du service de la protection de l'Environnement (EPA), Douglas Costle.

A l'issue de ces rencontres, tenues essentiellement sur la pluie acide, Fraser s'est dit confiant de la bonne foi des Américains et de leur volonté de combattre la pollution atmosphérique, malgré leur but avoué de recourir de plus en plus au charbon pour alimenter leurs besoins énergétiques.

De plus, le ministre fédéral a dit avoir conféré, hier, avec le ministre ontarien de l'Environnement, Harry Parrott, et obtenu de lui l'assurance que la province collaborerait entièrement avec le fédéral quand il s'agira d'observer de nouvelles

normes de protection de l'environnement.

D'après les discussions préliminaires entre le Canada et les

Etats-Unis, une équipe conjointe d'experts se réunira prochainement pour élaborer des normes de contrôles de la pollution, uniformes pour tout le continent nord-américain.

«Il y aura un traité entre les deux pays, et les provinces devront suivre les normes qu'il contiendra», a déclaré le ministre.

Cependant, si les provinces, décident de ne pas emboîter le pas, M. Fraser a dit que «J'ai dû dire clairement (aux Américains) que le gouvernement fédéral possède le pouvoir constitutionnel d'agir unilatéralement. Mais je ne crois pas que cela va se produire.»

Evoquant d'autres négociations qui ont perduré pendant des années dans le domaine de la pollution trans-frontière, le ministre a dit «qu'on ne peut pas attendre 10 ans sans établir des contrôles d'émissions (d'oxydes dans l'atmosphère)».

Déjà, a-t-il souligné, l'Ontario, la Nouvelle-Ecosse, le Nouveau-Brunswick et Terre-Neuve sont aux prises avec de sérieux problèmes reliés à la pluie acide. On n'est pas encore certain de la situation au Québec.

Cette contamination à l'acide sulfurique des eaux douces



Continued from page 18  
Suite de la page 18

provient du Canada et des Etats-Unis, mais on ne semble pas être d'accord sur les proportions des émanations provenant d'un côté ou de l'autre de

la frontière.

De toute façon, M. Fraser et les autorités américaines ont convenu que la question n'était pas de savoir qui pollue le

plus. «Nous sommes conjointement responsables de cette pollution et nous sommes aussi conjointement responsables du nettoyage».

The Gazette, Montreal - 6/8/79

# Acid rain: North America will beat it

By MAXWELL COHEN  
Special to The Gazette

OTTAWA — To project the death of hundreds, perhaps thousands, of Canadian and United States lakes from the Midwest to Nova Scotia and Maine powerfully evokes the image of an ever-threatened ecology and questions man's ability to preserve the ambient nature which must sustain him.

Hence the recent disclosures that "acid rain" — the result of sulphur-oxides and nitrogen-oxides spewed from great furnaces — has destroyed aquatic life in almost 200 Ontario lakes and probably has damaged as many elsewhere in the United States and Canada frighteningly suggests a chemical-industrial complex not yet, but potentially, out of control.

The high drama of the recent news is, however, somewhat startling. Suspicions about air pollution have been in the wind for a generation or more and are being studied quite intensively in Europe. In Canada and the United States, since the late 1960s at least, the Windsor-Detroit area particularly has been under careful observation.

## Long-distance pollution

What is new, however, is the awareness that local transmission of pollutants by air may be less significant than the total impact of long distance dispersion, with harmful chemicals carried hundreds of miles and falling upon land

and water either in minute solid form or encapsulated in what was once the clear innocence of a raindrop.

The paradox emerges that tall stacks were built to disperse fumes in the hope that the assimilative capacity of the skies would lessen injury by spreading the risks through space. In fact these transmissions, moving by now discovered pathways, have destroyed

any confidence in a simplistic hope of dilution through distance.

And so the long plumes, from Sudbury and its sisters, from plants in Chicago or St. Louis, are now the almost-proven sources of lethal effects on the life of the lakes, not only in the mid-continent area but far to the north, and east to the seaboard as well.

Unlike other airborne pollutants, the oxides fall from the clouds as acid rain and "purify" the life out of the waters below. Only large bodies such as the Great Lakes or those with certain "buffer" chemical qualities can resist acidity and biological death.

Surprisingly while the scientific data on Canada-United States acid rain may be relatively new, the legal principles of air pollution, as they touch on the responsibility of states damaging each other, are today quite deeply rooted in international law.

Indeed, the juridical parents of these modern doctrines are Canada and the United States. The Trail smelter case in the late 1920s, investigated by the International Joint Commission, examined, perhaps for the first time, the responsi-

bility of one country for air pollutants travelling miles downwind to damage the orchard life of a neighbor.

Consolidated Mining and Smelting Co. of Trail, B.C., emitting sulphur dioxide and other chemicals, was found to be the source of horticultural injury in the state of Washington 10 to 20 miles across the boundary.

The principle emerged that no one state may use its territory — industrially or chemically, for example — in a manner harmful to its neighbor. Two generations later these notions merged into the global environmental debate and were crystallized as a body of respectable "soft" law in 1972 by the resolutions at the Stockholm Conference on the Human Environment.

That was the same year that Canada and the United States signed the Great Lakes Water Quality Agreement. By then the public and governments were beginning to understand better the relationship between air quality and water quality problems. Hence all the work done by both countries after 1972 to clean up the Great Lakes embraced the water-air complex as a hard fact of life.

The renewed 1978 Agreement states this perception even more emphatically, and with greater clarity, so that both countries now have a precise duty to take account of the impact of atmospheric pollution on water quality and to shape their national control programs accordingly.

Continued on page 20  
Suite à la page 20



The day has arrived, therefore, when a broad ecological perspective makes it impossible to separate air, water, land, and man's behavior, just as nature perhaps never intended them to be divided, except for legal definition and physical description.

### New responsibilities

The long distance transmission issue, emphasized today by the increasingly detailed findings on acid rain, requires therefore both more precise scientific baselines and clear statements of trans-boundary duties and procedures for the shared, continental air pollution challenge. Hence the present negotiations between Canada and the United States, to set up an air pollution control, limitation and compensation system, take the matter forward to a future of joint duties and the common quasi-management of the continent's boundary-area — and even more distant — airsheds.

Given the classical United States difficulties, constitutional and political, of getting a formal treaty accepted, a sim-

ple executive agreement is the route of choice. It could be linked to the water pollution language of the magistral Boundary Waters Treaty of 1909 — as was done to support the Great Lakes Water Quality Agreement — since water and air cannot be divorced.

An agreement might set out the obligations of each country and establish a common monitoring system, along with joint investigative, research, advisory and dispute settlement mechanisms.

Considering the International Joint Commission's present responsibilities, directly and indirectly, for air pollution along the common frontier, a new international agency may be unnecessary.

The costs of control will have to be considered, leading to acceptable principles that would avoid undue and dissimilar economic burdens on either side with their inevitable resentments. "Let the polluter pay" becomes more epithet than policy if individual capac-

ties are to be a determining factor.

Norway and Sweden have suffered from emissions airborne from Britain and West Germany, and acid rains have damaged many of their northern lakes. The Scandinavians among themselves have developed a common legal structure for all pollution problems wherever they arise within the region. These

are models to be mindful of in approaching any future Canada-United States system and agreement.

There is no reason for panic, even less for delay. The energy crisis and the prospect of more coal-burning power plants, with accelerated coal-mining programs, together are enough to dismiss those who believe the times call for other priorities. The real issue is not only hard economics. It is lakes and men and survival.

• Maxwell Cohen retired this year as co-chairman of the International Joint Commission.

Globe and Mail - 9/8/79

## Acid-rain control will meet U.S. rules, Canada says

By LAWRENCE MARTIN  
Globe and Mail Correspondent

WASHINGTON — Canadian Environment Minister John Fraser met U.S. officials on the problem of acid rain yesterday and assured them that the Canadian Government would make emission control standards as tough as those in the United States.

Mr. Fraser said that he anticipated provincial cooperation on new standards, but if it was not forthcoming the federal Government could take other steps.

The emission controls would be on sulphur and nitrogen dioxides which are spewed out by plants and cause the acid-rain phenomenon. The acid rain, which winds carry from Canada

into the United States and vice versa, can kill plants and fish, corrode property and damage human health.

At the meetings it was decided that each country was culpable for acid-rain damage to its neighbor. As well as the commitment on Canadian emission standards, the two countries agreed to bring technical staff from their environmental agencies together to go over everything known about acid rain.

Mr. Fraser and U.S. Environmental Protection Agency administrator Douglas Costle agreed to meet again in October.

Because the United States produces more than seven times the air pollution Canada does and because the

prevailing winds are generally northbound, it is estimated that the United States dumps far more acid rain on Canada than Canada on the United States.

But Mr. Fraser emphasized in talks with reporters that "we Canadians do not come down here with clean hats. The fact of the matter is that they have tougher emission-control standards."

Although the Americans seemed to win on the one firm promise of the day, Mr. Fraser said that he was greatly encouraged with the commitment of his U.S. counterparts to attack the problem. Mr. Costle said that it wouldn't be a case of waiting on Canada to catch up on emission standards

before the United States moved on its own. "It's not a SALT type of deal."

Canada would like to negotiate a treaty which would see U.S. emission levels limited further. On the U.S. side, officials would like to see Canada adopt some form of liability and compensation over and above the tougher standards. As it stands now, U.S. citizens can't sue in Canadian courts but Canadian citizens can bring damage

suits in U.S. courts.

Mr. Fraser said the acid-rain issue is a top priority of Prime Minister Joe Clark. Mr. Fraser said that as many as 48,000 lakes will be dead by the end of this century if action isn't taken quickly.



# Front forming to fight 'acid rain'

OTTAWA — (CP-UPC) — Environment Minister John Fraser yesterday said he was confident the provincial governments would co-operate in a joint Canadian-U.S. effort to curtail the "acid rain" crisis that threatens the environment in both countries.

Fraser, just back from a meeting with his counterparts in Washington, told reporters he would act unilaterally if necessary, using the Clean Air Act which authorizes Canada's signing of pollution treaties.

He said Harry Parrott, Ontario environment minister, had indicated at an earlier meeting that his province would support Ottawa in its fight against the most serious environmental problem Canada has yet faced.

"He gave me a firm undertaking ... that the province of Ontario will fulfil the commitments which are considered necessary under the agreement (worked out with the U.S.) and they will apply diligently those

means which ... must be imposed on sources of emissions in Ontario."

Ontario, considered the main Canadian source of the acid-causing pollutants, last year extended a deadline for Inco Ltd. of Sudbury to reduce sulphur dioxide emissions by 80 per cent. Such emissions contribute to the increasing problem of acidic rains which destroy crops and pollute waters.

Fraser said time was the only problem in saving at least 48,000 lakes in Ontario over the next 10 years. He said a joint agreement with the United States would set out methods for pollution reduction and controls. But he said it would be irresponsible for him to set out a timetable for an agreement.

Fraser said officials from his department estimated the cost to Canadian industry to install pollution devices would be roughly \$375 million. The cost to U.S. industry would run from \$5 to \$7 billion.

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Globe and Mail - 15/8/79

## Dirty skies, hot rain

The next battle in the war against acid rain, which has killed 140 Ontario lakes already and could dispose of 48,000 of them by the end of the century, will have to be fought in Canada. This is so even though the United States produces more than seven times as much acid rain pollution as Canada does.

U.S. acid rain comes from mass production of sulphur dioxide and nitrogen oxides. It has far more smelters and utilities than does Canada. But the United States has much more stringent standards and penalties. It compels companies and utilities to remove much of the acid-creating chemicals from plant emissions before they are thrown into the air. Canada, instead, has built higher chimneys, which do not reduce the supplies of the poisons but merely disperse them further.

Federal Environment Minister John Fraser therefore had no choice when he made the first concession in negotiations with our neighbors. He has promised to make Canadian emission control standards as tough as those in the United States. He will seek provincial

co-operation in reaching these new standards, and he says that Ontario Environment Minister Harry Parrott has given a "firm undertaking" to "apply diligently" new standards agreed between the two countries. But Mr. Fraser has also warned the provinces that the federal Government will act unilaterally to set the new pollution standards if the provinces do not move quickly to combat acid rain.

This is no invasion of provincial rights. The emissions that cause acid rain cross provincial and international boundaries, and plainly come under federal jurisdiction.

Mr. Fraser should not count, however, on the Ontario co-operation being as eager as he hopes. The Ontario Government has been reluctant to enforce tough pollution control orders against industrial polluters.

It is not an area in which further delay can be tolerated. Canada, and Ontario in particular, is suffering severely from acid rain. Until we equal U.S. standards, we cannot expect to be successful in persuading the United States to raise its standards. And there



Continued from page 21  
Suite de la page 21

is a great danger that the U.S. inclination will be to lower not raise standards. It is already being suggested there that, in fighting the oil shortage, there should be a return to coal-fired utilities — a major source of acid rain chemicals — and a slackening of pollu-

tion controls.

If Canada is to have any hope of gaining the support of Americans in a further attack on acid rain — and that is essential for a living environment — we cannot argue from a position well behind them.

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CBF - Le monde ce soir - 10/8/79

### UNE DÉCISION QUE NE PRISE PAS LE MINISTRE QUÉBÉCOIS DE L'ENVIRONNEMENT

**JACQUES CLERMONT:-** Le ministre québécois délégué à l'Environnement, M. Marcel Léger, a qualifié d'"impensable" la décision du ministre fédéral de l'Environnement, John Fraser, de se rendre seul mercredi à Washington pour discuter du problème des pluies acides.

**MARIO PROULX:-** L'acide sulfurique qui retombe de l'atmosphère avec chaque ondée provient en grande partie des activités industrielles des Etats-Unis. Le ministre fédéral de l'Environnement, M. John Fraser, a décidé de corriger la situation en négociant un traité avec le gouvernement américain.

En juin dernier, le fédéral et les deux provinces touchées, le Québec et l'Ontario, se sont entendus pour négocier conjointement. Le ministre québécois, Marcel Léger, s'explique mal le fait que M. Fraser se soit par conséquent rendu seul cette semaine à Washington.

**MARCEL LÉGER:-** Monsieur Fraser est allé à Washington sans s'occuper du ministre de l'Environnement du Québec et, je présume, la même chose pour l'Ontario. Et nous n'accepterons pas cela parce que ce sont des richesses naturelles du Québec qui doivent être protégées et c'est de juridiction provinciale. Et y est impensable que le gouvernement fédéral, qu'il soit bleu ou rouge, centralise les décisions qui relèvent directement des provinces, et nous sommes opposés à ces décisions-là.

**M. PROULX:-** A cela, M. Fraser répond qu'il ne s'agissait que d'une rencontre exploratoire et qu'il tenterait d'organiser une rencontre le mois prochain entre les représentants de Washington, d'Ottawa, de Québec et de Toronto.

Ici Mario Proulx à Montréal.



## Provinces told to act on acid rain

By ROBERT SHEPPARD

Globe and Mail Reporter

OTTAWA — The federal Government will unilaterally set stringent air pollution standards if provincial governments fail to act quickly on the acid rain problem, Environment Minister John Fraser said yesterday.

But he added that he expected the provinces to cooperate fully with Canada's commitment to the United States that it would meet the more stringent U.S. air pollution standards.

Mr. Fraser said he has already received a "firm undertaking" from Ontario Environment Minister Harry Parrott that Ontario "will apply diligently" any new standards agreed to by the U.S. and Canadian govern-

ments as they negotiate a treaty to combat international air pollution.

Ontario industries are the largest producers of acid-rain-making pollutants in this country, and the provincial Government there has a history of backing off tough pollution control orders with industrial polluters.

Environmental regulations are traditionally a provincial responsibility, but Mr. Fraser said the federal Government is within its constitutional rights to step in because the matter crosses provincial and national borders.

Acid rain originating in the United States is drifting northward killing lakes making them unable to support fish in Northern

Ontario, and parts of Quebec and the Maritimes. Similarly, pollution from Ontario industries is affecting lakes and vegetation in parts of New England and has been traced as far south as Florida.

As many as 48,000 Ontario lakes may be sterilized within 20 years as a result of acid rain pollution, Canadian and U.S. scientists have warned.

Mr. Fraser said that if the negotiations become stalled or the provinces are slow to implement standards eventually adopted by the two countries, Ottawa would step in.

In the interim, however, no new initiatives or standards are being implemented on this side of the border to combat the acid-rain problem.

Globe and Mail - 22/8/79

### Limestone buffer no help

## 5,000 rainbow trout killed by acid rain in lake test

Special to The Globe and Mail

SUDBURY — An Ontario Ministry of Natural Resources' experiment with rainbow trout eggs in a lake with a high acid content leaves the possibility that some sport fish may never successfully reproduce in lakes severely affected by acid rain.

Biologist John Gunn said, "I think you have to acknowledge that we have a long-term problem." He said he wasn't very encouraged by the results of the experiment in which 5,000 eggs were planted in George

Lake near Killarney Provincial Park.

Although the eggs were successfully hatched in an area where limestone was used to neutralize high acid levels near the lake's outlet, all fry died within two days after entering highly acidic waters at the surface.

"I was hoping that by the time the eggs hatched in June, they would be able to withstand the high acid level of the rest of the lake. It seems that just getting out of the egg shell is the most sensitive stage," Gunn said. Previous studies indicated that trout eggs would not

hatch in water where the acid content was abnormally high.

Gunn attributed their death to large quantities of acidic water deposited on the lake's surface during the spring by melting snow. The fry died when they surfaced to fill their air sacs.

George Lake was chosen as the experimental site, he said, because it is a well-documented acid lake in the La Cloche mountain system. It is one in a chain of northern lakes whose fisheries are slowly being depleted and threatened by sulphur-

dioxide emissions.

The experiment was conducted in May by planting rainbow trout eggs in a box lined with a gravel bed. A 300-pound limestone buffer was constructed around the box to neutralize the water's high acid level and allow the eggs to hatch.

Gunn said the result "offers no real hope" for solving the dilemma of fish reproduction in acid lakes, but more satisfactory results might occur if hatching could be delayed until the crucial spring runoff period had passed.

Continued on page 24  
Suite à la page 24



Continued from page 23  
Suite de la page 23

"There might be some chance for a lake that bounces back after the spring runoff." He felt perhaps a hybrid egg could be developed that would hatch after this period. He said another answer might be to stock

lakes only with fish that could tolerate their acid levels.

Although continuous liming of lakes would improve the situation, Gunn said the constant use of lime to neutralize acid levels was ex-

pensive and time-consuming. Extensive liming may eventually produce negative results, he added.

Gunn stressed that present methods of dealing with acid lakes were only stop-gap measures aimed at

treating the symptoms, not the source of sulphur contamination. The ultimate solution lies in restricting emissions — liming is "too easy a route out for the industrialist."

## Some trout show immunity to acid

Special to The Globe and Mail

ITHACA, N.Y. — Researchers at Cornell University have learned that different strains of trout display widely varying immunity to the effects of acid rain.

Expanded efforts by scientists here to seek out the particular strains displaying the highest resistance have become possible through additional state funds.

Acid rain, an end product of coal- and oil-burning factories, has left many lakes in

Ontario and the northeastern part of the United States in a state where few if any fish can reproduce.

Researchers here hope to cross-breed acid-resistant trout to come up with a strain that will be able to withstand affected water.

The acidic content of the water may not be the whole problem. In certain areas, the rain releases aluminum deposits from the soil which seeps into the lakes and kills the trout.

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Eco/Log Week - 17/8/79

Toronto, Ont.—Ontario NDP leader Michael Cassidy wants immediate Canadian representations to the U.S. government on the problem of acid rain. In a telegram to Prime Minister Joe Clark, Cassidy said "the Canadian government must not allow the United States to create environmental chaos in this country through its attempts to deal with the energy problem."

The NDP leader stressed the international scope of the acid rain problem and urged the government to take a strong stand against any relaxation of pollution control standards in the U.S. "Continued acidic rainfall should not be the price we pay for American energy self-sufficiency," said Cassidy.

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# Une planète transformée en serre chaude?

par Pierre Ouimet

OTTAWA — La température de la terre se réchauffera de 2 ou 3 degrés Celsius au cours des 60 à 90 prochaines années si on continue à brûler des carburants fossiles et à déboiser les forêts tropicales au rythme actuel ce qui pourrait causer des catastrophes inouïes, selon le Dr Kenneth Hare du

Trinity Collège de Toronto.

Selon le professeur Hare, qui s'adressait hier aux quelque 1,000 membres de la «Soil Conservation Society of America», en congrès annuel à Ottawa depuis dimanche, la température des pôles, elle, augmenterait de 10 degrés.

«Ces changements climatiques, a dit M. Hare, seront les plus importants que le gen-

re humain a connus depuis les 10,000 dernières années.» Certaines régions du Canada, de l'URSS et des pays Scandinaves y gagneront peut-être, mais que des endroits

comme l'Afrique, l'Asie centrale, l'Inde et le Pakistan, où vivent des centaines de millions d'individus en souffriront énormément.



Continued from page 24  
Suite de la page 24

Les régions touchées ne pourraient plus soutenir l'agriculture qui s'y trouve et ne transformeraient graduellement en déserts extrêmement arides et torrides. «L'expérience du Sahel n'est qu'une indication à petite échelle», a dit le climatologue.

Il semble aussi que les cités côtières seraient inondées (par la fonte des calottes polaires) et que les marchés mondiaux d'alimentation seraient perturbés sans précédent. Le professeur Hare a rappelé qu'en 1972-73, des mauvaises récoltes, qui ont seulement entraîné une diminution de un pour cent de la production totale du monde, ont provoqué des flambées de prix disproportionnées.

Sur quoi se fonde le climatologue? Il a avoué que les experts de sa spécialité ne disposent pas encore de toutes les données susceptibles de prouver hors de tout doute qu'une telle calamité peut arriver, mais il a dit que les chances sont très grandes si l'on continue à brûler des carburants fossiles (pétrole, charbon) au rythme actuel et à abattre les forêts tropicales.

#### Dioxyde de carbone

Il a expliqué que ces deux «activités» de

l'homme augmentent toutes deux la teneur en dioxyde de carbone (CO<sub>2</sub>) de l'atmosphère.

«Cela change les propriétés optiques de l'atmosphère», a-t-il expliqué, «avec le résultat que la terre ne pourra pas se débarrasser aussi rapidement qu'avant, de la chaleur absorbée par le soleil.

Les forêts tropicales dilapidées sont situées en Amazonie, en Afrique, en Asie du Sud et du Sud-est, ainsi que dans les îles du Pacifique. Elles ont ceci de particulier que leur feuillage bloque complètement les rayons du soleil et protège ainsi le sol fragile. Une fois les arbres coupés, les températures élevées, les rayons du soleil et les fortes pluies détruisent et délavent les substances nutritives de la terre.

Une étude mondiale, entreprise par les Américains et appelée «Global 2000», a estimé que 20 millions d'hectares (1 ha<sup>2</sup>.47 acres) de forêts tropicales sont ainsi dévastées à chaque année, soit une surface égale à la moitié de l'Etat de Californie. On calcule qu'en l'an 2,000, la surface totale des forêts tropicales sera passées de 2.6

milliards à 2.1 milliards d'hectares, une diminution suffisante pour causer de graves

dommages à l'environnement et des souffrances pour des dizaines de millions de personnes.

Le professeur Hare ne croit pas que les instances politiques sont capables d'instaurer les changements fondamentaux que requièrent les prévisions des climatologues. Et il ne les blâme pas: «si j'étais politicien, je ne saurais vraiment pas quoi faire», admet-il.

La SCSA est une organisation essentiellement américaine qui compte néanmoins des membres dans plus de 80 pays. Elle regroupe 15,000 personnes, issus des gouvernements de tous les paliers, des agences de consultation, des organismes de récréation et de l'agriculture, qui se préoccupent de la conservation de l'environnement. Son congrès annuel se termine demain.

The Citizen, Ottawa - 29/8/79

# Doomsday

## *World polluting itself with carbon dioxide*

By Margaret Munro  
*Citizen staff writer*

TORONTO — All known types of pollution are dwarfed by the carbon dioxide which is slowly changing the earth's atmosphere, say scientists gathered here to develop a strategy for dealing with the problem "before it's too late."

"There's no past experience of pollution of this magnitude," Dr. C.S. Wong of the Federal Institute of Ocean Sciences said Tuesday.

He and the 40 top Canadian climatologists at the meeting predict that within 20 years, the Arctic ice cap will begin to melt and the prairies will suf-

fer a serious drought because of increasing carbon dioxide levels.

The gas, which prevents heat from escaping from the atmosphere, is being spewed out of oil- and coal-burning plants in amounts that will see the total double by 2050. At the moment, there is 708 tons of carbon dioxide in the air worldwide—10 per cent more than in 1950.

Dr. Kenneth Hare of the University of Toronto said man has only two realistic options for dealing with the problem—control the use of fossil fuels or adapt to the changing climate.

Due to the international co-operation that would be required in the first

option, he said he "has no doubt" the world will simply adapt to temperature increases of two Celsius degrees at the equator and 10 degrees in latitudes like Canada's.

However, he said there is considerable preparation necessary to meet the changes that could begin to affect Canada's agriculture industry before the turn of the century.

Currently, Canada has no carbon dioxide pollution program. The federal Atmospheric Environment Service has asked the climatologists to draw up recommendations to be presented to Energy and Science Minister Ray Hnatyshyn this fall.



The U.S. government's program has been operating on more than \$1.5 million annually since 1978.

The first step the Canadian scientists will urge is an expansion of the research program and computer facilities responsible for their Doomsday predictions.

"Nature has a habit of making fools of us," said Hare. "Though there is no doubt the carbon dioxide levels are in-

creasing, there is a chance nature is solving the problem and we don't even know it."

To be certain the climatologists are on the right track, Hare said it is essential that crop and soil specialists, marine biologists and forestry experts begin looking at how the gas is distributed in the atmosphere.

There is also a need for the federal government to put satellites and climat-

ic stations to work to pick up the first signs of environmental changes, said Dr. R.E. Munn, head of environmental studies at the University of Toronto.

Munn said federal officials must also start developing alternate energy sources capable of eliminating the use of fossil fuels in Canada.

"We have to leave all our energy options open, including that of nuclear power," he said.

Globe and Mail - 27/8/79

## Nature's storms can put prediction in technical spin

When nature runs amok, our thoughts turn to technological fixes.

For example, in the aftermath of the vicious windstorm that pulverized parts of Regina recently, federal Environment Minister John Fraser noted that budget restraints had prevented the installation of sophisticated weather radar that could have given advance warning.

It seems to be a reflex reaction — to contemplate what sort of gadget might have bailed us out. But, in the case of extreme weather events, we should have a clear understanding of what technology can and, more importantly, cannot do.

Take the Regina storm for example. Radar would doubtless have given some advance warning, but not much more than an hour or so. Would this have changed the outcome much? The main advantage would have been human safety; there are no gadgets to stop or divert such storms or ward off the property damage.

There are thousands of observ-

ing stations around the world, most of them on Northern Hemisphere land masses. Data from the oceans and the Southern Hemisphere are not as good and there's a big international effort under way to improve this situation.

This effort is crucial in improving medium-range (seven-to-ten-day) predictions, because forecasts of more than two days or so require data from all over the world.

The data are fed into computers that contain mathematical models — a series of equations representing the earth's atmosphere. These models then run forward in time and predict future weather conditions.

It sounds simple, but isn't.

The accuracy of the forecast and the length of time it covers depends on how well the computer model mimics the real atmosphere. The amount of arithmetic involved in medium- and long-range forecasting is staggering. In fact, few computers work fast enough to do all the calculations before the weather itself arrives.

A Cray-1 computer, which can carry out 50 million instructions per second, has just been installed in Britain in a new centre sponsored by 17 European nations. Feeding on data from around the world, it has the speed to spit out a medium-range forecast within a few hours. In a recent preliminary run, it accurately forecast a fine spell over England.

Canada's weather computer, located at Environment Canada's meteorological centre in Montreal, is not so fast and it uses only data from the Northern Hemisphere. It costs about \$1-million a year; one-third to one-half of the cost of the Cray computer.

Ian Rutherford, acting head of the Numerical Prediction Research Division, says the rest of the world is moving to faster computers. Canada, a country severely affected by extremes of weather and climate, can't afford not to follow suit, he said. "Weather forecasting is limited by the computing machinery we



can bring to bear."

Of course, even super-computers have their limitations. Localized and short-lived weather phenomena, such as the tornado that flattened Woodstock recent-

## ■ COMMENT ■

BY  
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ly, simply cannot be forecast more than an hour or so in advance, no matter how many millions the computer has cost.

Radar can see storm cells, but it doesn't distinguish between rain, hail and tornadoes (al-

though the latter sometimes have characteristic hook shapes.) Nor does radar reveal whether the tornado has actually touched ground.

These limitations have prompted Environment Canada to introduce a new "gadget" — the human being. Parks and conservation workers, highway construction crews, and others who work outdoors and have access to two-way communications have been recruited into a weather-watch program in Ontario.

Meteorologist Michael Newark will attend a conference of amateur radio operators in October to enlist their aid as well.

Of course, simply detecting bad weather is not enough. People have to be warned in time. Here, there seems to be a weak link, as the Woodstock tornado demonstrated. (Inoperative phonelines apparently prevented an alert from getting through.)

In the past, Environment Canada depended largely on the media to broadcast severe weather

alerts, but even before Woodstock, the department had introduced its own broadcasting system. Called Weatheradio Canada, it has started in Halifax, Montreal, Toronto and Vancouver. Edmonton, Regina and Winnipeg will soon get the service.

The Nova Scotia Government has installed repeater stations so the Halifax broadcast can be heard throughout the province and out to sea.

Because of the radio frequency used, special receivers are required. These receivers needn't be turned on all the time. Set to the alert mode, they will sound a tone or start broadcasting when a severe weather warning is issued. The receivers cost \$30 to \$250.

Although anyone can get the receivers, Environment Canada seems particularly anxious to see the media putting them to use. As technological fixes go, this one is less expensive than usual and it should be encouraged.