BLACK FRIDAY

OUR DARKEST HOUR



—Photo by Larry Wong





—Photo by Peter Cutler



—Photo by Larry Wong



—Photo by Paul Wodehouse

ABOVE: A tornado survivor watches over his injured friend at 66 Ave. and 27 St.

ABOVE RIGHT: Amateur photographer Roy Steele caught the fury of the tornado ripping through Byers Transport lot.

BOTTOM RIGHT: An elderly woman is rescued from the Evergreen Trailer Park.

BOTTOM CENTRE: A worker is pulled from rubble of Lee Mason Tools.

BOTTOM, FAR RIGHT: An aerial view shows the devastation in Clareview.

BLACK FRIDAY

Trailers wiped out in seconds

By GRAHAM HICKS
Staff Writer

It was as if a god stepped out of the sky, planted one giant foot in the middle of Evergreen Mobile Home Park, and continued on his way.

Hours after the tornado had hit, I headed down the road to the park from the Manning Freeway, past police roadblocks, past lines of survivors heading the other way.

In this cruellest of moods, nature was now pretending nothing had happened.

The storm had long broken. The sun was shining. Buildings and trees en route showed no damage.

Even on Evergreen's western outskirts, damage was minimal. Sheds had been blown over, tin sheathing was in the trees.

And then, at the park's entrance, the devastation. To the left, trailers still stood, albeit damaged.

To the right, the world had been levelled. Nothing could be seen but a tangled mess of pink insulation, battered furniture and smashed cars.

Delilah Bodman, 23, wandered through the mud. She spoke of the tornado like a living creature. "It knew where it was going," the survivor said. "It knew its business. It knew what it was going to do."

She had found her cat, Pebbles, hiding in the remains of a doghouse. Kitty in her arms, she searched for her husband and young son.

Her home had been damaged, not destroyed. She thought her husband, Ken Gilmour, had stopped at employer Nick Nachia's home across the road from the park.

Scared, Bodman left her home for her mother's. She was a half-block away, in her car, from the tornado. "At first, it was the wind. And rain like you wouldn't believe. Then one long streak of blackness and wind, just a-givin' her. I didn't see a funnel. All I saw was black and the wind."

In the middle of the carnage, a crane, assisted by firemen, slowly hoisted a fallen wall off a central pile of debris.

Florence Brenneis paused in her search for an injured friend's belongings. She watched, holding her breath, hoping the freed-up boards would not reveal yet more victims.

In a lesser crisis, Brenneis would have allowed herself the luxury of shock. She'd been in the tornado's eye.

The Brenneis run Brenneis Vegetable Farms, 30 acres of vegetable crops just south of Evergreen.

Thirteen employees had come in from the fields when they saw the threatening clouds blowing across Clareview.

"We saw the twister coming, but we thought it was heading the other way," Brenneis says. "Suddenly it changed direction.

"The trees started snapping, the trucks were being shifted. I yelled, 'run for the roothouse.'"

In the face of the twister, through hurricane-force winds black with dirt, the group ran the width of a city street to the long unused, ground-level roothouse.

"We made it. We got to the roothouse. I don't know how. The doors blew open. We grabbed on to each other. I opened my eyes. The roof began to fly up. I panicked. I yelled. We all yelled. We held on to each other for dear life."

Florence's husband Richard had been in the farm's garage with another employee. They found him, blown across a field, across a stand of trees. "He may have lost his finger, but he's okay," Florence says. "The employee was seriously injured."

The garage, greenhouses, half their home, four trucks, and several acres of crops were destroyed.

"Right now, I don't care," says Florence. "We're alive."

At midnight Friday, Delilah's prayers were answered. Her husband and boy had left his employer's house, en route to a job site. They were safe, out-of-town.

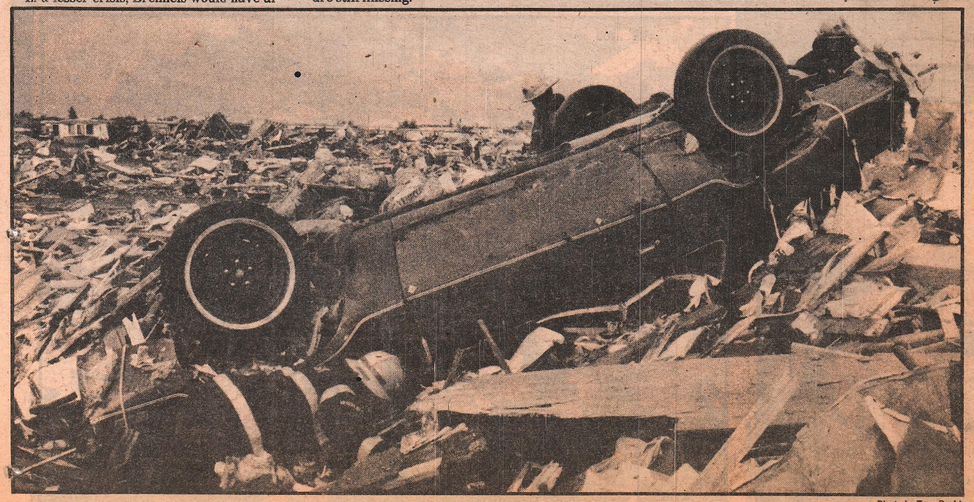
"Nick and his wife," she said, biting her lip, "are still missing."



—Photo by Paul Wodehouse

NOTHING BUT DEBRIS

This is what was left after a tornado passed through Evergreen Mobile Home Park.



—Photo by Tom Braid

City firemen check out an overturned car for signs of trapped passengers after the twister touched down in northeast Edmonton.

'I have nothing left'

Robert Koch and his son, like so many others at Evergreen Mobile Home Park, only escaped with their lives.

The 28-year-old oil tool worker had just 10 payments left on his uninsured $25,000 trailer when Friday's twister tore through the park.

But Koch was thanking his lucky stars his son, 7-year-old Jevon, was at a sister's home in Lethbridge.

"I can just thank my stars. Nobody could have survived that."

Koch's trailer was only chunks of rubble.

"Look at this, I have got nothing left. My house is gone. All I have right now is what I'm wearing. Everything is ruined," said Koch.

BLACK FRIDAY

Getty promises aid



—Photo by Doug Shanks

Joe Clark toured the Emergency Relief Services warehouse yesterday with ERS president Heather Airth.

By TONY SALOWAY
Staff Writer

Premier Don Getty yesterday pledged provincial government support for a "generous" relief effort to help tornado victims rebuild their homes and lives.

He said Prime Minister Mulroney phoned him Friday night from Quebec to assure him that the "resources of Canada would be behind us."

On a visit to the eastern Quebec riding of Charlevoix, Mulroney said he contacted Getty to express "all the shock, grief and sadness of Canadians" at the news of the tragedy.

Meanwhile Getty, who toured the devastated Evergreen trailer park with his wife, Margaret, yesterday said they were "shocked and shared the grief" of the victims.

"Until you see it you just can't believe it. You can't believe it from pictures," said the premier.

Getty toured the main areas of devastation — the trailer park, a Sherwood Park industrial site, and neighborhoods in Clareview and Mill Woods.

Daryl Nosko, whose Clareview home was levelled by the twister, said Getty told him the government would take care of damage not covered by insurance.

'Worry about the dollars later'

Getty said the city and county of Strathcona have been told to concentrate on clean-up and relief efforts and not to worry about the dollars.

"We're going to work to restore them (the victims) to before this thing and worry about the dollars later.

"It'll be done with generosity and sympathy — not legalistically in any way.

"We're going to help in every way possible. In the meantime, shelter is being provided for everybody."

Both Getty and Acting Minister responsible for disaster services, Ian Reid, praised the way support services had responded to the disaster.

Reid said the quick response and good co-ordination showed the "advantage" of having a disaster plan.

"The initial response was remarkable. Often when something like this happens there is confusion.

"It shows the advantage of setting that up in advance so you can put it into effect rather than 'ad hoc' it," Reid said.

Getty praised the way local police and fire services had responded and gave credit to Mayor Laurence Decore.

"I commend the mayor on his efforts. We stand by him in every way possible," Getty said.

Emergency response excellent

"The police and fire department — and all the organizations involved — have done a superb job. That's one message all Albertans should know."

Technology Minister Les Young, who is Tory Edmonton MLA caucus chairman, said the government is going to have to "make some decisions very quickly" on how to tackle the problems.

"We're trying to do the best we can and the people of Alberta would expect nothing less."

Young said the first stage is the physical clean-up, but also giving as much support and help to the families as possible "with the least amount of red tape and difficulty for them."

Young said he was personally shocked by the chaos. "It's so absolute and so fickle. I've never seen anything like this."

Margaret Getty said the sight of the destruction "makes me feel sick."

In an ironic twist, Ken Kowalski, the minister normally responsible for disaster services, was in hospital himself Friday undergoing knee surgery as a result of a hockey injury last December.

CITY RESIDENTS RESPOND WITH FOOD AND CASH

Relief fund swelling

By TIMOTHY LERICHE
Staff Writer

Albertans have opened their hearts to the people left devastated by the tornado.

The Edmonton Sun, supported by its sister newspapers in Calgary and Toronto, is establishing a relief fund to aid those worst hit by the tornado.

All money donated will be given to the Red Cross, which is spearheading Edmonton's relief efforts.

"We're appealing to *The Sun's* generous readers to contribute much-needed cash to those left homeless and destitute by Friday's disastrous tornado," said publisher Pat Harden yesterday.

Sun papers start local drive

"*The Sun* will donate $1,000 to get the fund started, and similar appeals are being launched by our sister papers in Calgary and Toronto.

"Our American sister *The Houston Post* is also reporting on the fund for any Houstonians who want to donate."

The United Way, in an emergency meeting yesterday, gave $10,000 to the Red Cross Edmonton Tornado Victim Fund and made a total of $100,000 available to other city groups aiding the victims.

Red Cross president Rick Tyre said the fund was beefed a further $25,000 by a donation from the Muttart Foundation, and a steady stream of over-the-counter donations all day yesterday at the Red Cross society building at 9931 106 St.

The Edmonton Kinsmen donated $5,000 and got $10,000 from its national association for the Edmonton Kinsmen Relief Fund, said Kinsmen vice-president Dave Potter.

"It's a great city," said volunteer Dave Stuart, who went to the Emergency Relief Services warehouse at 10820 119 St. at 10 p.m. Friday, only a few hours after the tornado touched down.

"I came here and said 'do you need my truck?' and they said 'no, but we need your body'," said Stuart, a Canada Post employee.

Relief services president Heather Airth said donations have come in from all over Alberta, and from as far away as Boston, Mass.

It's not known exactly how much was collected, but the 25,000 sq-ft. warehouse that was almost empty Friday was full by yesterday afternoon.

She asked that donors now take their goods to the Western GMC warehouse at 116 St. and Kingsway Ave. because the ERS warehouse can't handle anymore.

"Edmontonians are very, very special people," said Airth. "If you can get 50 people at 3 a.m. on a Saturday to work, with 20 people lined up out the door to make a donation, that says a whole lot about Edmontonians."

Volunteer Ron Billig said the response to the emergency has been overwhelming.

"People don't know what to do, so they're giving clothing, food, anything they can. There's 250 families that need help and we hope the response continues over the next few days."

Four families already helped

Billig said four families who lost their homes in the disaster came into the warehouse Saturday morning and were given food, clothing, and in some cases, temporary shelter.

In Sherwood Park, the Franklin's Inn Ballroom Cabaret was converted into a temporary relief centre, and chamber of commerce president George Rosbrough called the donations "unbelievable".

"We've inundated the Edmonton warehouse," he said.

Barrie tornado victims start fundraising drive

BARRIE, Ont. (CP) — People in this Central Ontario city know what it's like when a tornado rips through town — that's why they interrupted a summer festival yesterday to help out the battered residents of Edmonton.

"People around here are pretty sensitive to tornadoes," said local radio broadcaster Hugh Brown, referring to a trio of twisters that killed 12 people and ruined some 500 houses in the Barrie area in 1985.

Brown said people attending the Kempenfest carnival on the Barrie shore of Lake Simcoe began an impromptu fundraising drive early yesterday, by passing a hat around.

"You'll probably find lots more things happening here to raise money," he said.

Brown, a newscaster and reporter with CKBB radio, said his station was working with a local television station to put together on-air advertisements seeking contributions to a relief fund for Edmonton residents.

DISASTER!



Baby found alive



Survivors describe ordeal



Relief effort pledged



Twisters kill 25, injure 300

Sunday SUN

Special coverage section on twisters inside

64133 00100

BLACK FRIDAY

TWISTERS WREAK AT LEAST $50M DAMAGE IN CITY

Death toll at 25



Fred Nolin, 82



Etta Nolin, 73



Richard Gillespie, 29



Ajmer Dhaliwal, 30

By EDMONTON SUN STAFF WRITERS

Shock turned to grief in Edmonton yesterday as the first victims of the city's worst-ever natural tragedy were identified.

The medical examiner's office released the names of 18 of the 25 people killed after two tornadoes ripped through Edmonton in an orgy of destruction Friday afternoon.

The twin twisters also wreaked a horrendous amount of damage — at least $50 million according to early insurance estimates.

But it is the human cost that was counted yesterday.

The Evergreen Mobile Home Park in the city's northeast, where 14 people died, was the worst hit.

The savage winds destroyed 200 mobile homes and damaged another 150. Police said about 300 people were injured in the Edmonton-area, eight of them critically.

The following are names of dead recovered from the Trailer Park:

James Allen, 45, Sharon Andruchow, 15, Merle Bain, 50, Marie Barker, 50, Lloyd Fankhanel, 55, Fred Nolin, 82, and his wife Etta, 73, Kelly Pancel, 18, and Mary Putnam, 59 and Mrs Pat Robertson.

Those found in the south east industrial area bordering Edmonton and Sherwood Park are identified as:

George Demetrius, 19, Ajmer Dhaliwal, 30, Richard Gillespie, 29, Daniel Lewis, 18, Edito Mendosa, 40, Clement Nault, 54, Graham Palmer, 43 and Gregory Trabenik, 41.

Multiple blunt injuries in all cases

The cause of death in all cases is multiple blunt injuries, said Dr. John Butt, chief medical examiner.

All of the victims identified so far are from the Edmonton and surrounding area.

Three of those not yet identified are children.

Butt added his office also has a list of almost 50 missing people although he stressed that does not mean those people should be considered dead.

As rescue workers continue to dig throughout the night in a search for more victims, tales of heroism and tragedy surrounding the dead began to surface.

A teenaged mother was killed protecting her three-week-old baby girl from the deadly twister.

Kelly Pancel, 18, died to save her baby daughter, Meagan, her grieving husband said last night.

Louis Pancel said his wife was in a trailer at the Evergreen Mobile Home Park when the tornado approached.

Kelly and another woman placed Meagan between them while another man in the trailer covered the trio.

When the tornado passed, Kelly was dead but Meagan and the other two adults in the trailer suffered only minor injuries.

Louis was too upset to talk at length but his mother Donna Pancel, 43, said of her daughter-in-law, "It was a very courageous thing. She gave up her life for her daughter."

"Kelly was a kind and generous person. It's a great shock. There's nothing I can say to express what I've lost. It's a complete disaster," she said.

Louis and other family members had the painful task of positively identifying Pancel's body at the medical examiner's office last night.

The grief-stricken husband was working just outside Edmonton near the International Airport when disaster struck.

The couple was married only last March.

The fiance of George Demetrius, whose body was pulled from the rubble of Nault Lumber, 6274 25 St., said she never thought her husband-to-be had been caught in the twister.

Vonda Foraie, 24, said relatives initially weren't too worried when George didn't come home on time from his laborer's job.

"We just thought he was out helping other people in the storm because he was always helping out others," said Foraie, who'd known her fiance for two years.

Foraie said she was shocked when told her husband's body was recovered from the rubble late Friday.

"He was a very caring person and a very hard worker," she said. "He was always helping people to move or helping them fix their motorcycles or their truck . . .

"I'll never replace him. He was the best person in the whole world. I don't know what to do now. Half of me is gone."

Foraie said her fiance had a three-year-old daughter named Lyndsay and he was known to friends by his nickname 'Butch.'

The couple had just bought land in Stony Plain and were building a house.

Demetrius' aunt, Pat O'Mara said the family is still finding it difficult to believe a tornado could rob them of their loved one.

"We were totally shocked that a tornado could even hit a place like Edmonton," she said.

"It's terrible. The two of them were a very well matched couple."

The owner of the sawmill company where Demetrius died spent 30 years building up the company, said Gladys Nault of her husband Clement, 54.

Gladys said his body was found in the rubble of the sawmill warehouse at 3 a.m. yesterday.

"The company was his life," said Gladys from their Sherwood Park home.

When asked to describe her loss yesterday, she said, "Words can't express my feelings."

Other victims include;

- Greg Trabenik, 41, was branch manager for Finning Allied, a construction equipment firm located in the Sherwood Industrial Park.

Greg's wife, Nina, 39, said she first heard of her husband's death at about 6:30 p.m. Friday.

The couple had three children — two girls aged 17 and 12 and a nine-year-old boy.

- Fred Nolin, 82, and his wife, Etta, were visiting their daughter in the Evergreen park.

Nolin was a retired yard man for a local lumber yard while Etta, had worked at various cashier positions.

The couple's son, Robert, said his parents were visiting at their daughter's trailer when the tornado hit. Their daughter was out at the time.

Etta was found Friday night while Fred's body was located yesterday morning.

Butt said yesterday that some of the victims "are not in a condition to be visually identified."

Last will be hard to identify

"The last few will be the most difficult (to identify)," said deputy chief medical examiner Graeme Dowling.

"These are the ones where we don't even have tentative identification," said Dowling.

He said he believed most of the dead didn't suffer.

"I think these people were dead quite quickly. I think there's some consolation to the next-of-kin in that.

The tornadoes, accompanied by several smaller funnel clouds, struck first in the Mill Woods area at 3 p.m., said Environment Canada spokesman Dave Burnett.

The tornadoes — both part of a single system — then moved across Edmonton from the southeast to the northeast.

As news of the tragedy spread condolences poured in.

Queen Elizabeth II sent this telegram to Edmonton from Buckingham Palace yesterday: "I was deeply shocked to hear of the dreadful tornado which has caused such widespread havoc in Edmonton.

"Please pass my deepest sympathy to those who have so tragically been bereaved and all others who have suffered."



Clement Nault, 54



George Demetrius, 19



Kelly Pancel, 18



Gregory Trabenik, 41

Damages over $50 million

Insurance Bureau of Canada officials say while it's still too early to estimate total property damage it will be immense.

"A low-side figure would be $50 million. But it could be double that or more. I don't want to scare people by saying $500 million," said Alan Wood, IBC's regional vice-president.

Wood said member companies are still taking claims and investigators have not been able to get to many of the sites.

But he said homeowners can expect to recover most of the damage cost.

Tornados are classified as 'windstorms' — a standard feature of policies — not as Acts of God, Wood said.

- Mayor critical of warning time — Page 4
- Our columnists comment — Page 11
- How twisters form — Page 28
- One of the worst tornadoes in Canada — Page 29
- Damage forces Stelco layoffs — Page 44

COVER PHOTO: This aerial photograph by Paul Wodehouse shows destruction at Evergreen Mobile Home Park.

BLACK FRIDAY

Site tour 'shocks' premier

By KERRY DIOTTE
Staff Writer

Rescue workers and survivors picked through the rubble of the Evergreen Mobile Home Park yesterday as Premier Don Getty made a tour of the devastation.

Tornadoes cut a swath of destruction through the 700-home park Friday, killing 14 people and destroying 200 of the mobile homes.

The wind tossed many of the homes like toys. Several were stacked along a row of nearby trees, creating a 100 metre-long twisted metal fence.

City spokesman Bonnie Kulak said 1,700 people lived in the park, where police estimated total damage at $10 million.

"I am absolutely shocked," said Getty as he surveyed the destruction.

"The provincial government will do everything to help these people," he said.

"The province will build new trailers and we'll worry about the costs later.

"When nature does this you feel very humble."

Only piles of rubble remained where some of the homes had stood. Some of them had been flipped upside down and had their walls torn away. One sat atop a flattened car.

Resident Mark Ernewein, 23, stood amid the disaster area yesterday clutching a small portable stereo and an 'I Love Edmonton' sticker — the only two possesions he had been able to find.

"I came here today and all I saw was an empty lot," said Ernewein. "These are the only things I've found.

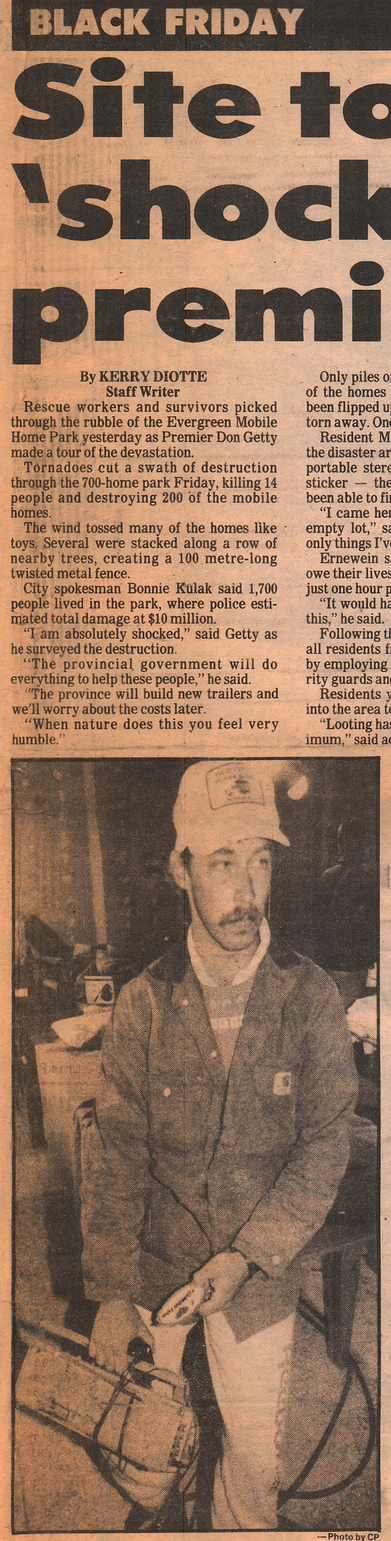
Ernewein said he and his pregnant wife owe their lives to the fact they'd left the park just one hour prior to the storm.

"It would have been impossible to survive this," he said.

Following the storm, police had evacuated all residents from the park and sealed it off by employing 45 uniformed officers, 30 security guards and up to 150 volunteers.

Residents yesterday were allowed back into the area to survey the destruction.

"Looting has been kept to an absolute minimum," said acting Sgt. Bruce Billings.



—Photo by CP

Mark Ernewein holds a portable stereo and an 'I Love Edmonton' sticker, all he was able to salvage from his mobile home.

Resident Linda Solberg said she and her husband spent two hours picking through the rubble of a next-door trailer looking frantically for her three nephews and their babysitter.

'Blew apart'

"The three of them made it out alive somehow, but the babysitter didn't make it," Solberg said, her voice cracking with emotion.

"The trailer they were in next to ours just went up and blew apart."

Authorities yesterday confirmed the death of the sitter, 15-year-old Sharon Andruchow.

But she said quick thinking by her youngest nephew Ryan Kinnee, 8, prevented him from being killed.

"He wrapped himself in a sleeping bag and crawled under a bed. I'm just so relieved."

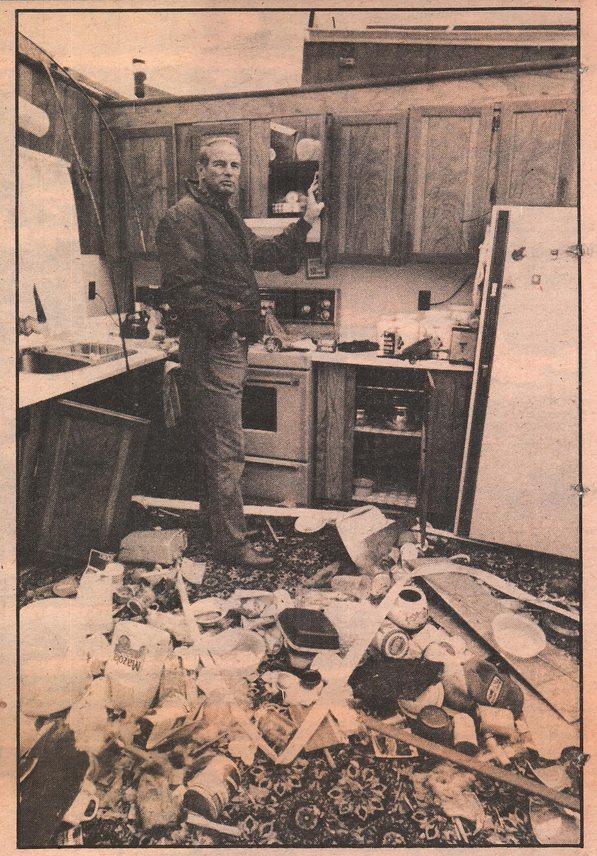
She said she spent hours agonizing over the fate of her other two nephews until word came that they too somehow survived without serious injury.

Like quake

Edmonton Ambulance Authority worker Mark O'Flanagan said the trailer park destruction reminded him of Mexico City after the 1985 earthquake.

O'Flanagan — who'd worked nearly 24 hours straight at the Evergreen site — had headed a Canadian rescue team to help in the wake of that quake.

"It's the same level of destruction here, but it seems worse because this is right at home," he said.



—Photo by Larry Wong

Premier Don Getty tours Evergreen Mobile Home Park yesterday.

Tot torn from woman's arms

By MINDELLE JACOBS
Staff Writer

Nancy Desjarlais only had time to wrap her two-year-old son in a blanket and huddle with him on a bed before the tornado picked up her mobile home and sent it flying 30 metres.

When it crash-landed moments later, the force of the impact tore her son, Aaron, from her arms and sent them both tumbling across the room, Desjarlais, 22, recalled yesterday from her bed at the Royal Alexandra Hospital.

Aaron, protected by the blanket, escaped injury when the walls of their trailer, in the Evergreen Mobile Home Park, collapsed around them.

Nancy was not so lucky. Pinned under the debris, she suffered a fractured hip and pelvis and a deep cut to her right leg.

"I knew I wasn't going to die. I just kept praying: 'If there is a God, please help me,' " she told *The Edmonton Sun.*

Her puppy, a toy poodle named Chico, is missing and presumed dead and her newly-furnished trailer was destroyed but she's just glad she and Aaron survived.

"I had a lot of nice stuff that I'll never have again but I'm so happy my baby is alive. I'm really sore but I'm going to be fine."

She and her son were pinned under the wreckage and unable to move, but a man came to the rescue minutes later. He pulled Aaron out first and then propped her over his shoulder and carried her to a car.

"He ripped his shirt and tied a bandana round my leg. The pain was unbearable," recalled the unemployed single mom.

Meanwhile, recovering in the Royal Alexandra Hospital is Dix Duncan, 22, another resident of the Evergreen Mobile Home Park.

Duncan, a jazz gymnastics teacher, suffered a fractured skull, separated shoulder and numerous cuts and bruises when the tornado sent his trailer somersaulting.

He told reporters he was lying on his bed when the room "started to twist and flip over" and he blacked out.

Duncan woke up at a friend's trailer but doesn't remember how he got there. Friends told him he crawled out through a hole.

"The bones were showing in my toe. I must have been walking through a lot of glass to get to my neighbor's.

"I lost everything except my life. It was terrifying. I thought I was dead for sure. I feel very lucky to be alive."

882140106 MON AUG.01,1988 PAGE: A4
CLASS: News SOURCE: CP
DATELINE: Edmonton AB WORDS: 612
MEMO: Early Edition

87

** Relief still aiding needy **
** 'Silver lining' left in wake of*tornado's*devastation **
*Canadian*Press

Two hours of terror

Trailer park was all gone in seconds

By CONAL MULLEN
Journal Staff Writer

Her voice breaking, Judith Arbuckle described how she hid under a bed with her daughter and mother when the Evergreen Trailer Park was smashed by Friday's storm.

"I wasn't hurt, but I've seen so many who are. I found . . . one lady with her eye out.

"I can't believe so much destruction in a matter of seconds, and that's all it was, a matter of seconds."

The killer tornado ripped through the park, turning it into a field of chipwood, mangled bodies and moaning injured.

"It was a nightmare," said Paul Theroux, 27. "I saw my neighbor's trailer go up in the air. I was hanging onto a couch to hold me down."

A truck was flung through Theroux's living-room window, and his neighbor's trailer landed on his home. He escaped with minor injuries and ran outside.

"People were just running to their cars to get to hell out of there," said Theroux, his right arm in a sling made from a plastic bag and towel. He said he saw a boy with his arm hanging off.

Vicki Mohn, her head bleeding, pointed to a twisted trailer on top of two others. "That's my trailer. The people underneath are still in there."

When the storm hit, Mohn clung onto a closet and watched her china cabinet fly past her head.

"I thought, Oh God, I'm going to die."

Her trailer was lifted but she was flung onto the lawn. Her home and another landed on top of her neighbor's trailer. Mohn said a man and woman lived next door.

"I saw her closing her window the same time I was closing mine."

Police and other rescuers walked with stretchers through a pile of twisted metal, wood, shoes, clothes, smashed appliances, calling for survivors.

Albert William, 36, came home from work to search for his two children, aged six and 10.

"I don't know where the hell they are," he said, unable to discover if they were safe from busy disaster workers.

Most of his possessions, including his trailer, had vanished.

"I haven't even finished paying it off," he said quietly. "I finally get a job and get all this stuff, and then all of a sudden it's gone."

Joe and Philip Michetti searched a pile of debris that was once home to try to find their sister, Rose. They found the wrecks of three cars but no sister.

Lambert and Betty Bartelds found their insurance policy and a tin of photographs in their flattened trailer. Bartelds said he and his wife were flung about 30 metres through the air.

"All of a sudden we were sitting in the open. We found one neighbor girl under a pile of rubble."



PICTURES: Mike Pinder

Surrounded by shattered belongings and twisted homes, two survivors hug each other

Rescuers dig through city of grief

By KAREN BOOTH
GORDON KENT
and TOM BARRETT
Journal Staff Writers

An army of rescue workers continued to search for bodies and to comfort grieving relatives throughout the night at the shattered wreckage of Evergreen Trailer Park.

The body count reached 13 Friday night — eight women, three men and two children — but that total was expected to continue climbing as firefighters, police, ambulance workers, soldiers, volunteers and desperate relatives sifted through the carnage.

Provincial mental health specialists were at the trailer park Friday evening, helping the survivors of the tornado, Labor Minister Ian Reid said.

Reid, filling in for Environment Minister Ken Kowalski heading the province's emergency services, said experts from the mental health division of the Community and Occupational Health Department were helping victims to cope with the trauma of the storm.

He said it has been learned from other natural dissasters that "over a period of time . . . (survivors) go through a tremendous emotional turmoil."

An impromptu first-aid centre and morgue manned by city police was besieged by trailer park residents begging for information about missing friends and loved ones.

Police spokesman Lori Nagy estimated 100 injured people have been evacuated and about 150 mobile homes were demolished.

Many of the homes were flipped upside-down and hurled about by the tornado until they resembled nothing but a pile of twisted rubble.

Brian Berger, who arrived at the most heavily damaged area only seconds after the funnel cloud ripped through, described a scene of unparalleled devastation and chaos.

Driving with his daughter, Berger picked up two injured people and rushed them to nearby Alberta Hospital.

"One lady was very badly hurt. Let's put it this way — I could have put my fist right into the hole in her chest," he said, still shaken five hours later.

Berger said he could see other stunned and severely injured people staggering through the wreckage but only had room for two in his car.

After the storm, frightened survivors huddled near the shopping centre, one of the few structures still standing even though a telephone pole had pierced one of its brick walls.

The Happy Pizza and Steak House was turned into a temporary morgue. Medical staff in another store worked on injured people placed on desktops.

Six hours after the tornado hit, teams of six firefighters, each accompanied by a paramedic, searched designated sections of the park hoping to find survivors but mainly looking for bodies.

The only survivor to emerge from the wreckage at that time was a badly injured and frightened dog which was turned over to SPCA officials, Nagy told The Journal.

"There are still a lot of people who are unaccounted for," she said.

One of four men working at a gas station within the park described his feelings as windows were shattered and the roof was ripped off the garage.

"I thought I was dead. I figured this was it," Carmen Varty said. "I just couldn't believe it. I've seen these things on TV but I never thought on God's green earth that it would ever happen to me."

Varty told how he and three others raced into a washroom and waited in silence as the twister destroyed the garage.

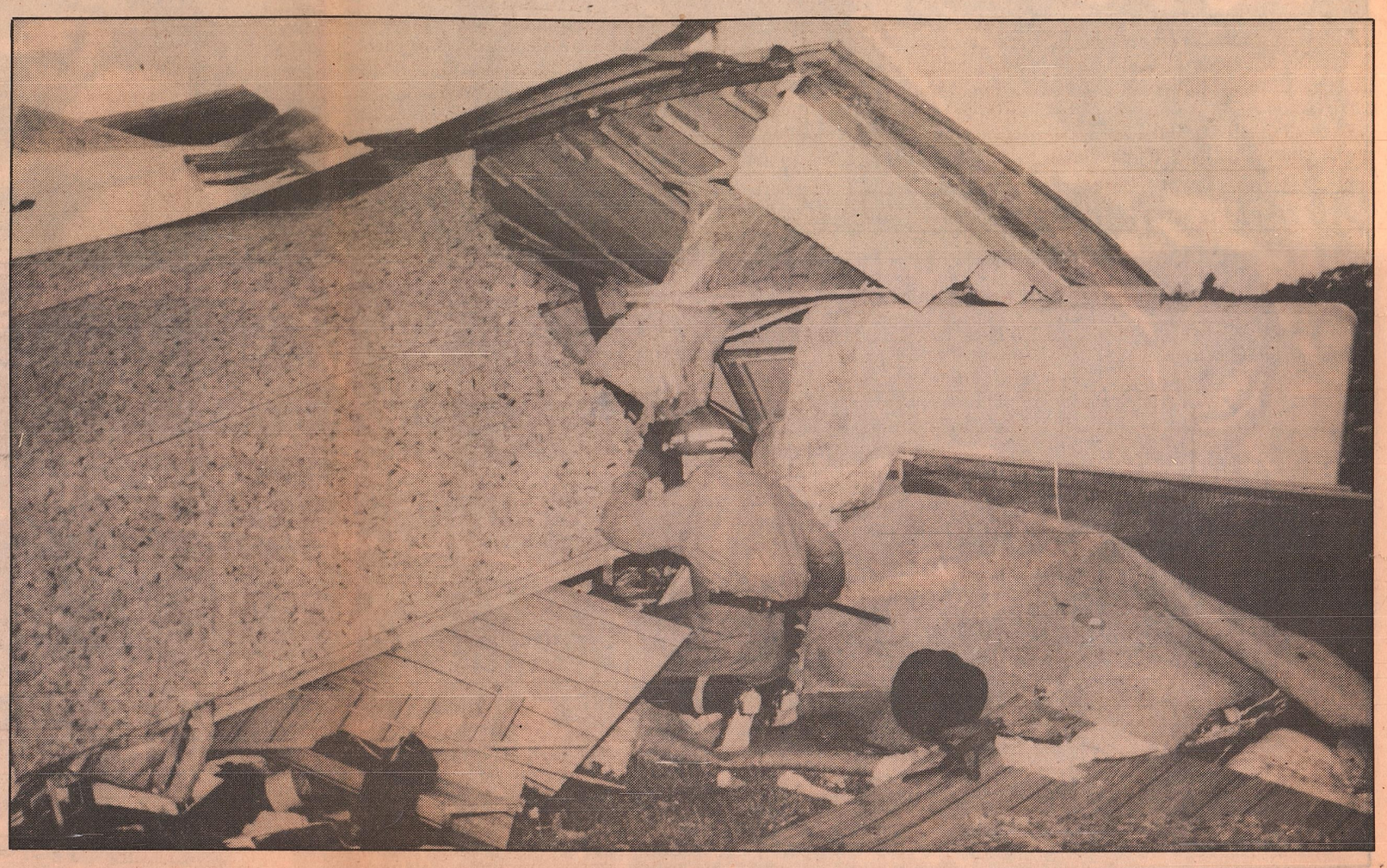
"We weren't talking about nothing; we were just wondering if the roof was going to come off."

Another of the first men on the scene described the wind as "roaring like a jet engine" as it tore a strip through the park.

"I helped dig out about five people. A couple were screaming, and a lot of them were badly hurt, but I think they all survived."



Man examines what is left of a car after vicious tornado flipped it over as if it were a child's toy



Rescue worker kneels to peer beneath twisted walls and roofs in hopes of finding survivors

Two hours of terror

Quick-thinking saved us—survivors

By ALLAN MAYER
Journal staff writer

"I can't believe we got out of there alive."

Darcy Elliot's two buddies agreed last night as they surveyed what was left of the Byer's Transport Building on 76th Avenue.

Cars were squashed like bugs. Huge trucks were pancake-flat. And their workplace was a jumble of shattered glass and twisted metal.

The three had crawled out of the wreckage just hours before, but returned to the scene to remind themselves of their good fortune and to take in the full horror of nature run amok.

Elliot and Shawn Hodgson saw the funnel cloud appear and had but a few moments to scramble for cover. They jumped into the cab of a truck in one of the loading docks as debris, including heavy carts, flew through the air around them.

Their quick thinking probably saved their lives. As the two huddled in the cab they could hear solid objects bounce off the truck. Two of the windows exploded and an overhead beam landed a few inches above the roof. The truck began to slide around.

"I figured we were finished. Beams were falling off the roof. The wind was explosive," said Hodgson.

In an nearby office, their friend Trevor Pacholoc dived under a desk.

It seemed like an eternity, but a few minutes later all three scrambled out of the building.

Vehicles weighing 3,000 to 4,000 pounds had been tossed around. "Before it hit I almost got sucked out the loading door. If we hadn't jumped in the truck, we would have been dead," Elliot said.

Late Friday, police and firemen continued to sift through the rubble at Byers although they were almost certain everyone had escaped.

One fireman said: "This looks more like Kansas than Edmonton."



What's left of Byer's Transport Building on 76th Avenue

PICTURE: Ray Giguere



PICTURE: Karen Sornberger

Not a window was left intact in the upper storey of this building in the industrial area

Sherwood Park industrial area flattened, crushed

By MATTHEW McCLURE
and CATHY LORD
Journal Staff Writers

The Sherwood Park industrial area looked like a war zone, with debris from flattened buildings and crushed vehicles strewn everywhere.

From a vantage point on the Sherwood Park Expressway near 34th Street, there was destruction as far as the eye could see.

In a 20-block stretch on either side of the expressway, the tornado cut a path from the south which spared few buildings.

Amidst the chaos, people were lending police, firefighters and ambulance workers a hand in their search for survivors.

North of the congested expressway, Jim Werbicki and his fellow employees at the Canada Dry bottling plant carried two seriously-injured workers on a make-shift stretcher over 500 metres to where ambulances were hemmed in by downed power lines.

"We found them in the field," said Werbicki. "I don't know how they got there because the nearest building is quite a ways away."

At Byers Transport on the south side of the freeway, dazed men stumbled through the wreckage of the loading dock and maintenance shop. They called, then listened for a reply from beneath the twisted wreckage.

Foreman Gary Cochrane was glad the twister didn't strike an hour later when afternoon shift workers would have been inside the truck terminal.

"We think we've got everyone accounted for, except that guy lying over there,' said Cochrane, pointing to a hastily-covered body lying next to the wrecked plant, "but it's still hard to know at this point."

Don Cariati, supervisor of the two-storey CN Rail Turnout Shop that was levelled by the tornado, said his staff of 45 men went home early at 3 p.m., a half-hour before the tornado struck.

"They asked me the night before if they could leave early (for the long weekend) — we're so lucky they did," said Cariati, who returned to the wreckage when he heard that the twister hit the area.

At Laidlaw Waste Systems building, a distraught woman waited for news of her aunt, seven months pregnant, and uncle — both employees in the building hit by the twister.

Dennis Bochon, who works at Atlas Crane, was also away from work when the twister hit. He returned to find out how his co-wokers fared, but no one was in the devastated building.

"I'm just sick,' he said. "I hope no one's lying in there because I've got real good friends in there."

Kurt Schiller was at work elsewhere in the industrial park at 3.30 p.m. when "the power cut and somebody said 'hey, there's a funnel cloud coming down,' so I went outside and watched it just miss our shop.

"Every time it hit something, all the debris would go flying — little did I know it was ripping buildings apart," said Schiller.

Brian Newmayer said it's the first time he's seen a twister and the last time he wants to.

"It's the most awesome thing I've ever seen — I was hoping it was a bad drug flashback."



Looking like the results of a giant god's meddling on a speedway, cars in the Sherwood Park area were flipped over and stacked atop each other

Two hours of terror

Body taken from rubble of sawmill

Glen Johnson, 32, office manager at Nault Sawmill and Lumber Co. Ltd. for 13 years, returned to his destroyed premises after treatment in hospital late Friday night and witnessed a body being taken from the rubble.

"A customer came into the office to buy some lumber this afternoon and told us to come outside and look at the clouds," he said.

"The clouds were shaped like a funnel and then a few minutes later it hit us. We ran through the office to the concrete warehouse for protection but the doors were blown in and debris was flying through the air and hit us.

"I went back to the office with three or four guys. I lost my glasses and I couldnt see six inches. I did see a young guy killed. I believe a truck had landed on him."

John Beauman, 37, formerly of the Edmonton Ambulance Authority, helped lead the search through the rubble.

"We believe there might be as many as six still missing," said Beauman, who led a team of 14 Canadians to Mexico City when an earthquake struck there 18 months ago.



Ambulance attendants take injured man to hospital for treatment of injuries

PICTURE: Steve Simon

World seemed to be ending—survivors

By JOHN GEIGER
Journal Staff Writer

A twister that slashed its way through an industrial park in south-east Edmonton made it seem as if the world was at an end, say eyewitnesses.

The two-block-wide tornado left a grisly trail of death and destruction, flattening warehouses, barns and homes in an area east of 34th Street between the Whitemud and Sherwood Park Freeways.

Police, firemen and ambulance medics worked frantically to help the injured and contain the disaster after the funnel cloud ripped through the area on the outskirts of Edmonton about 3:30 p.m.

"It seemed like the end of the world was here; you couldn't tell what was going to happen next," said Ted Gartner, an employee of Brown and Root Ltd.

"The debris was flying around so badly, you couldn't see anything. We all thought we were going to die."

"It was worse than anything in the movies, like Wizard of Oz, 'way worse," he said. "There was a lot of damage, we were just about wiped right out.

"Luckily, only a couple of people were hurt. One guy got hit from flying debris. He was in bad pain; he was bleeding, an ambulance came, and he was taken to the hospital."

Gartner said the tornado was "two-blocks wide" at ground level.

Shipping receiver Rosemarie Wilcott was in the Brown and Root Ltd. mechanic shop at 5301 127 Avenue, when she saw the tornado was upon her.

"It came right over the building; it picked a van up, and I didn't see it come back down. I said, 'it's coming right now.' Then we ducked down under a table. It tore an 18-foot overhead door off, but we weren't hurt."

Trained in first-aid, Wilcott rushed to help others, first to the Brown and Root head office, then to nearby Byers Transport Ltd.

There she found a man lying motionless beside the building.

"He was dead. I put my rain jacket over the guy. There was nothing I could do. He must have been outside, in the open. He must have been picked up in the middle of it. He was no more than 23 or 25," Wilcott said.

"After that, I crawled on my hands and knees into the flattened building to see if anyone was trapped or hurt, but all of the Byers people were out by the time I got there. In the mechanics shop, there were two guys pinned under steel, but the fire department got there to help," she added.

Just a block away, Inger Johnsen, of 2940 68 Avenue, was cooking dinner in her farm home when the power cut out.

"After it got dark, it started roaring like a train, like kaboom, the wind was just bashing both sides of the house, so I ran down to the basement. I knew what was happening," Johnsen said.

"When I came out, everything was just ruined. My barns are gone, my granaries, three shops, it's all gone. A lot of our chickens are dead. We had to put a colt down. It was too badly hurt to save. What's left? Everything is destroyed," she said.

Only the Johnsen home remained standing although the funnel cloud ripped up parts of the roof, smashed all of the windows and destroyed much of the home's contents.

"It's sad, but it's more sad down the road," she said, referring to the deaths of workers in several nearby buildings.

Dozens of cars, trucks and camper trailers in the area were also badly damaged.

Gartner described the scene: "A lot of the people at Brown and Root had their cars badly damaged. They couldn't drive them. It looked just like a junk yard — some of the cars had actually been picked up and smashed into the ground, crushed."

Tim Simpson, administration manager of the construction firm, said the tornado caused "many millions" of dollars damage to the company buildings.

"We saw the storm coming at us pretty good. We didn't have much time to react. This black cloud started spiralling down in the distance. We ran downstairs, windows started coming in, there was a big suction," Simpson said.

"We just hoped the building would hold up and we'd make it through. Some people started to scream — it was awful."

Helen Kennedy of Royal Auto Wreckers, 6031 34 Street, said: "The roar of the wind is what amazed me; it reminded me of that film Earthquake. I saw it just swooping along, it just clipped our yard."



Ambulance crews lift stetcher from top of a car to rush one of the victims to hospital

PICTURE: Karen Sornberger

Machine shop was blown apart in 20 seconds

By DIANA COULTER
and JUDY MONCHUK
Journal Staff Writers

In 20 seconds it was over.

Dean Mason was close to tears as he described how one of his co-workers was crushed by a wall that caved in when the tornado struck Lee Mason Tools, 64th Avenue and 28th Street.

"I was just 10 feet away," said Mason, who dug himself out of the rubble only to find machinist Ed Mendoza was dead. Another Lee Mason employee, oil fuel laborer Rick Gillespie died after being pinned under a lathe.

Glen Petruk, 30, was at the opposite end of the machine shop. When the windows blew out, he bent down to grab his dog Merrydover and held onto a door jamb.

"We were like a bunch of idiots watching the storm come. I feel lucky I survived," said Petruk, who was caked with mud and blood.

"It was like a big giant took a spade, dug in, and turned the whole place upside down."

Police spokesman Lance Beswick said by early evening, there were about 100 police, firefighters and volunteers sifting through the rubble at the industrial park looking for the dead or any trapped survivors.

Police said people were emerging alive from the debris hours after the storm struck.

More than a dozen businesses were destroyed when the twister touched down in the six-block area just before 4 p.m.

Frank Pasek, 56, was thrown 20 feet in the air when the tornado levelled the Selox building. He landed pinned to the ground by a metal rod that had pierced his clothing, miraculously missing his body.

Pasek freed himself, then went for rescuers to help a man trapped under a steel beam only two metres away. But when Pasek returned with firefighters, they could find no body and there was no response to repeated calls.

"If he was still alive he would have heard me and answered," said the visably shaken Pasek.

Darcy Brooks, 25, of Nault Lumber, watched as his buddy's truck was shoved through the company's side wall and landed in an office.

"I was saying my prayers because I figured it was the end. There were guys on top of you and after it was over, all I could hear was screaming, moaning and groaning," said Brooks.

Nault's lumber was tossed like "matchsticks" across neighboring fields, and was where rescuers concentrated their search efforts as dusk drew near.

A CN train was thrown off the tracks as the twister touched down, ultimately moving the tracks over about one metre north. A 10-metre long, 1.3-metre pipe weighing about one tonne was tossed 100 metres.

Kevin Tetzloff, 29, office manager of Norton Steel, huddled in a storage room with four co-workers as the tornado blew out the office windows.

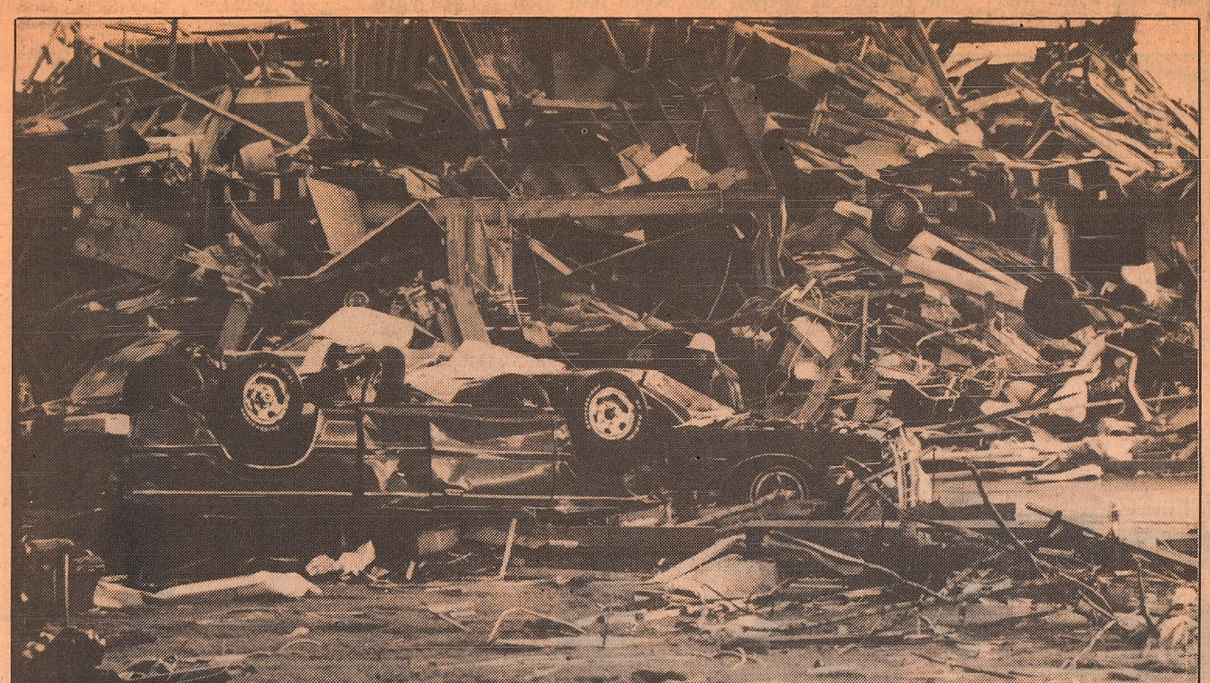
"Our 20,000 square foot warehouse is gone," said Tetzloff.

Two hours of terror



PICTURE: Karen Sornberger

Rescue workers comfort an injured person in the city's east side industrial area in the wake of Friday's devastating tornado



Overturned cars lie among the wreckage of the Byers Transport warehouse



Woman abandons stalled car in deep water which flooded 99th Avenue



Rescuers survey the damage in a section of refinery row where trucks and cars were hurled about in the storm



Two boys save a dog at Evergreen Mobile Home Park

Two hours of terror



Firemen tend to storm victim near Refinery Row. In background are derailed tank cars.

The Journal's team was on the scene

Stories by:

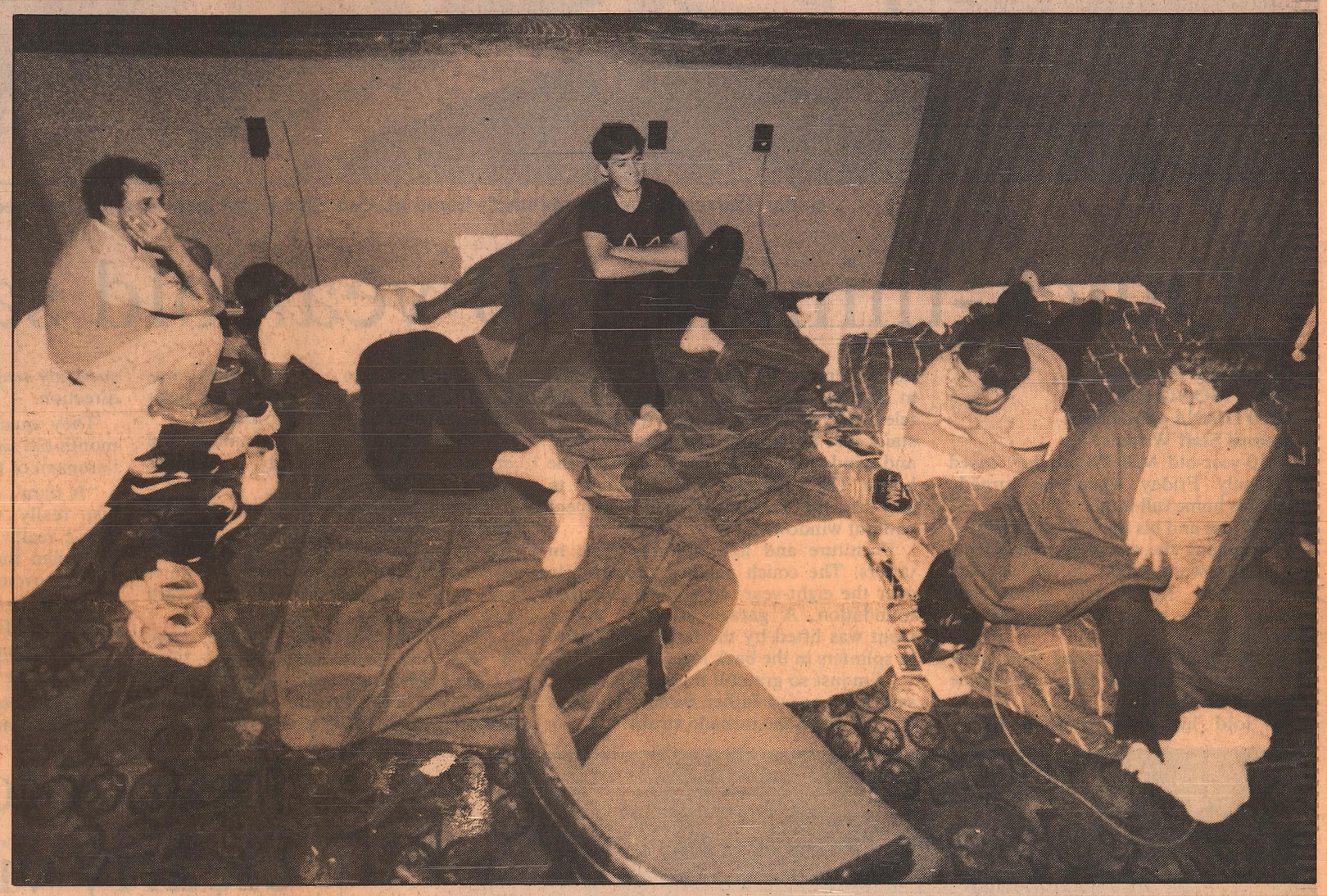
Bryant Avery, Tom Barrett, Bob Boehm, Karen Booth, Diana Coulter, Lesley Francis, John Geiger, Marta Gold, Richard Helm, Gordon Kent, Brian Laghi, Nick Lees, Cathy Lord, Jac MacDonald, Allan Mayer, Matthew McClure, Kim McLeod, Francis Misutka, Judy Monchuk, Lasha Morningstar, Marilyn Moysa, Conal Mullen, Greg Owens, James Parker, Karen Sherlock, David Staples, Roy Wood

Pictures by:

Brian Gavriloff, Ray Giguere, Ken Orr, Paul VanPeenen, Mike Pinder, Ian Scott, Steve Simon, Karen Sornberger.



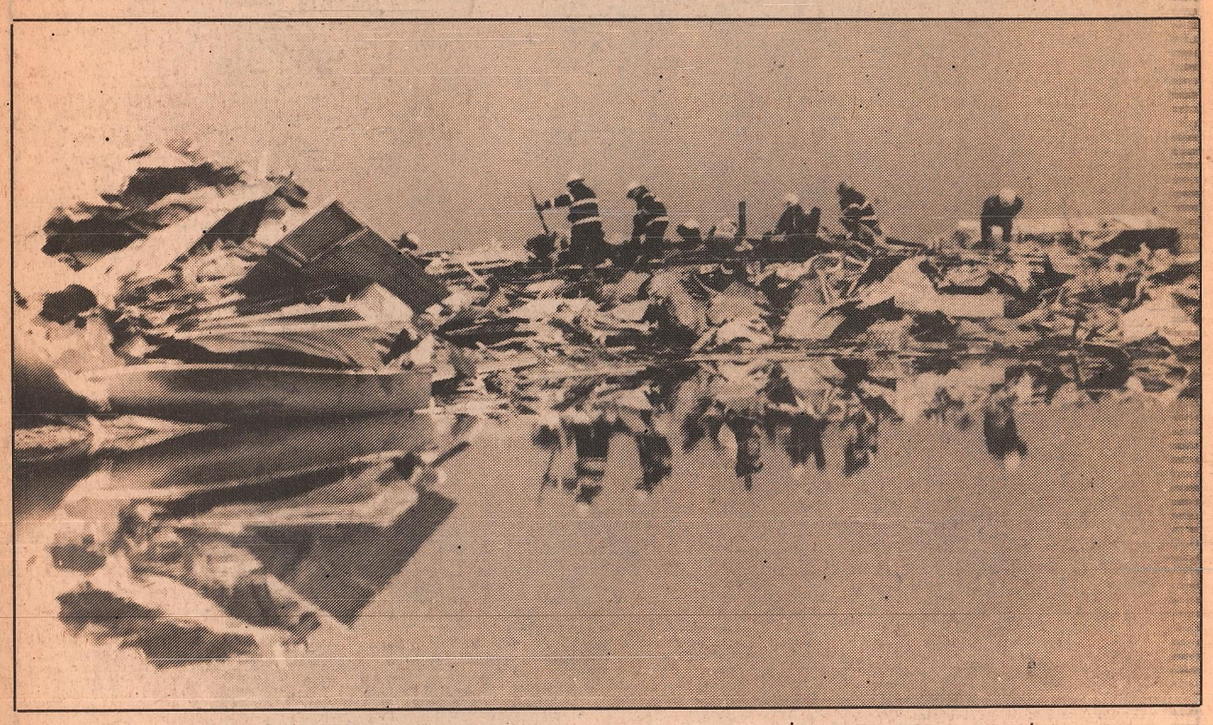
Evergreen Trailer court resident surveys damage



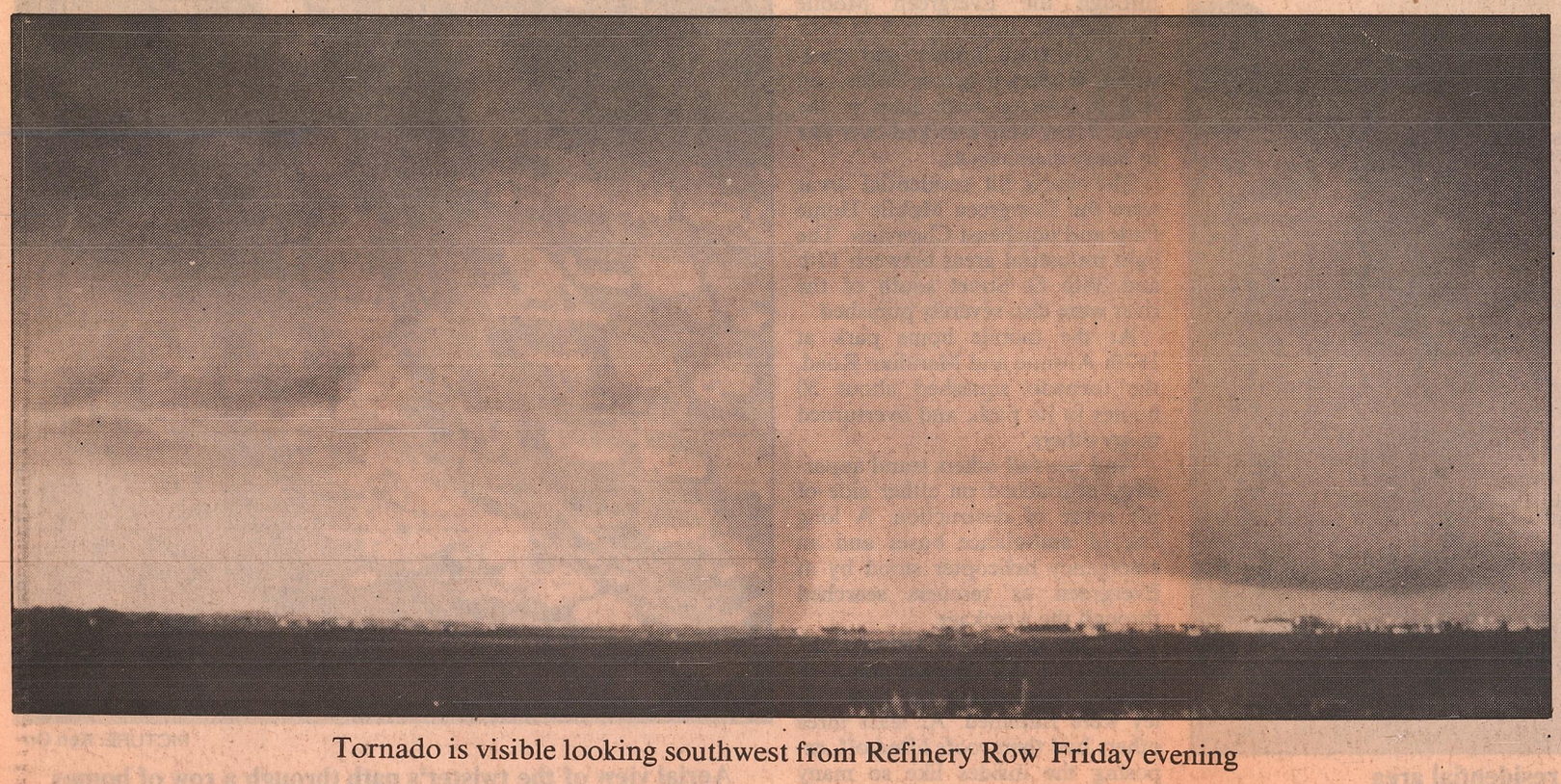
Some of the people left homeless by the tornado take shelter in the Londonderry Mall



An Evergreen couple stands amid the ruins of what was once their home



Firefighters are reflected in still waters near Evergreen Trailer Court



Tornado is visible looking southwest from Refinery Row Friday evening



A man hunts through wreckage of Evergreen community



Salim Thaven helps friends who's home at 35th Street and 20th Avenue suffered severe damage

PICTURE: Karen Sornberger

Quick-thinking 10-year-old saved his family

By JAMES PARKER,
JUDY MONCHUK
AND DIANA COULTER
Journal Staff Writers

A 10-year-old Mill Woods boy saved his family Friday when the tornado struck his home full force.

Ali Virani and his uncle Abdul Bandali were watching the storm approach from the east towards their house at 20th Avenue and 35th Street when they realized it was more than thunder and lightning.

At least eight houses along their block were severely damaged. The Virani home was totally destroyed.

Ali told his aunt Gulshan to go downstairs. As he followed her, he yelled at Abdul, who was shutting off the television, to hurry. Abdul reached the stairs just as the front door burst open, and winds blasted the back walls off the house. The youngster told the adults to stay in the section of the basement without windows.

Furniture and light fixtures hung in tatters. The couch perched precariously over the eight-year-old house's damaged foundation. A garage attached to the front was lifted by the force and landed in splinters in the back lane.

"I'm just so grateful no one was hurt," said Ali's proud father Bashir, who was at work when the tornado struck.

Esther Ferguson of 2115 35th St., was huddled in the basement with her three children when the twister struck.

"The children kept screaming and crying 'Where's daddy? Where's daddy?' " Ferguson said.

The family breathed a sigh of relief when Duncan Ferguson arrived. Surveying his home he found huge holes in the roof, light fixtures filled with water and their boat lifted from the front yard and wedged in an alleyway.

"Everything was flying every direction, it was just phenomenal," said Mike DeLong, who lives on the same street.

DeLong and his wife Leanne were watching the storm build when they suddenly realized it was headed in their direction.

They quickly gathered up their 18-month-old son Dylan and sprinted to the basement of their bungelow.

"It didn't seem that loud and it was just really windy," said DeLong. "I didn't really realize (it was a tornado), but when the roof came off I thought, this is movement."

Wreckage from the roof of his home landed in a field behind the subdivision.

"It was like someone lifted the roof right up," he said.

It blew out the living room windows and devastated the family's backyard. The garden shed landed 200 metres east of where it once stood.

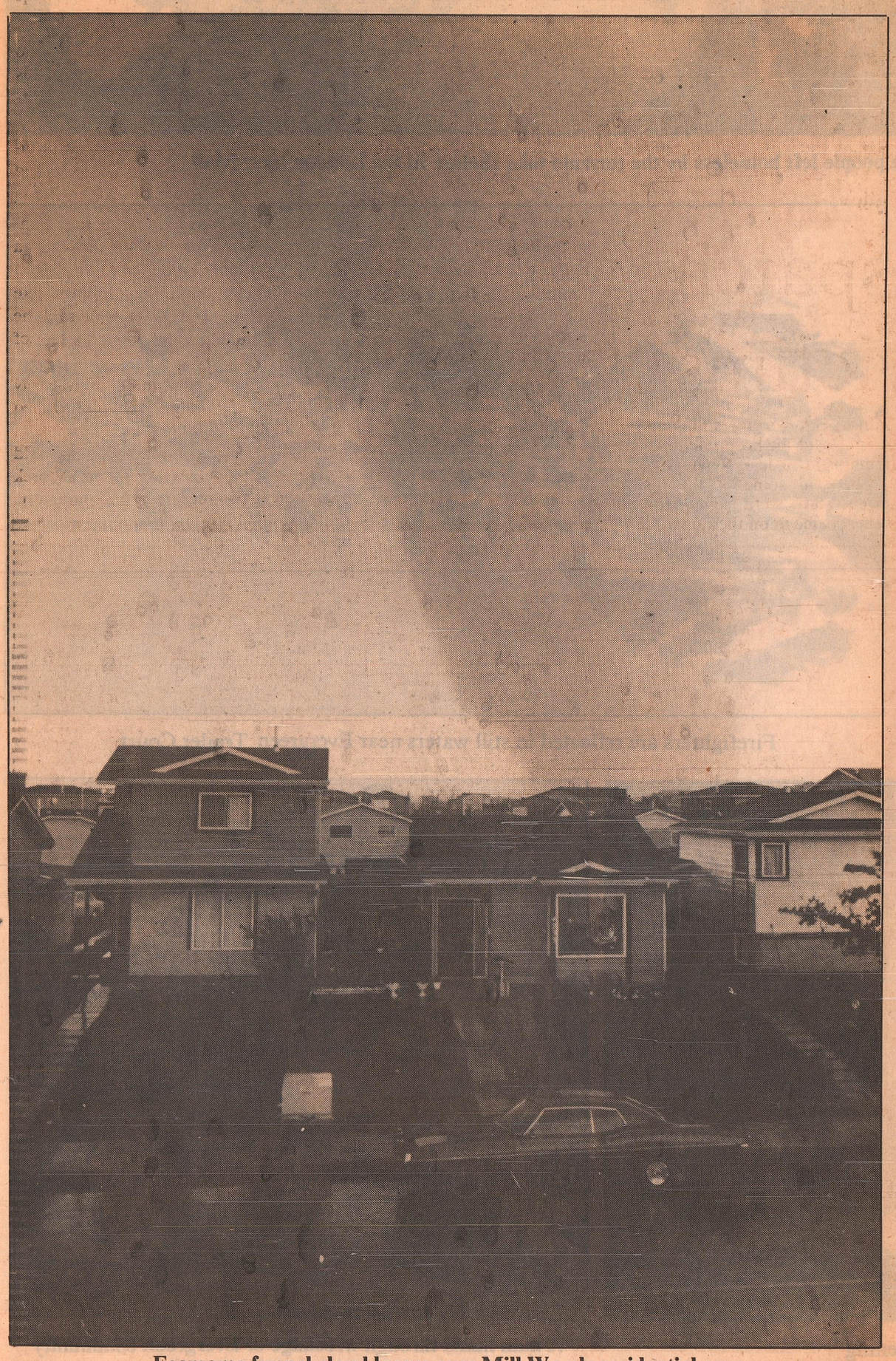
Despite the heavy damage to his home DeLong's van parked in the driveway remained untouched.

In the midst of renovating his house, DeLong had hopes of selling it in the near future. He estimated the storm caused $30,000 worth of damage to his 11-year-old home.

DeLong and his family intend to spend the next few days with his wife's parents.

Despite the devastation the young father didn't seem angry.

"What can you do . . . there's not much you can do," he said while shaking his head.



Fearsome funnel cloud looms over Mill Woods residential area

Path of tornado's devastation clearly visible from the air

By JAC MACDONALD
Journal Staff Writer

Flattened homes and businesses, debris strewn about roads and fields, exposed and wrecked roofs, and lumber strewn about like straw, mark the proportions of Friday's devastation.

The swath of destruction wreaked by the tornado is evident from the air — and, so is how close it came to being much more terrible.

The view from a light plane minutes after the second storm swept through the city showed that the tornado narrowly missed huge sections of Mill Woods and Clareview.

There were several damaged homes along 34th Street near 23rd Avenue — at least one with its roof ripped off. But much more death, injury and property damage was narrowly averted.

After touching down northeast of Beaumont, the twister took a northerly course between 17th and 34th Streets. It then made an S-shaped swath to the northeast through the Evergreen Mobile Home Park.

Debris from homes and businesses is strewn across fields and into ravines on both sides of the river. Trees were knocked over like so many matchsticks.

The worst hit residential areas were the Evergreen Mobile Home Park and northeast Clareview. The light industrial areas between 17th and 34th St Street south of the river were also severely punished.

At the mobile home park at 167th Avenue and Meridian Road, the tornado squashed about 30 homes in its path, and overturned many others.

And yet still others stand apparently untouched on either side of the route of destruction. A long line of ambulance buses and an emergency helicopter stood by at Evergreen as rescuers searched through the wreckage.

In Clareview, three homes at the corner of 145th Avenue and 19th Avenue overlooking the river valley were flattened. At least three others had their roofs lifted off, exposing the insides like so many dollhouses. Numerous other Clareview homes had their shingles blown off.

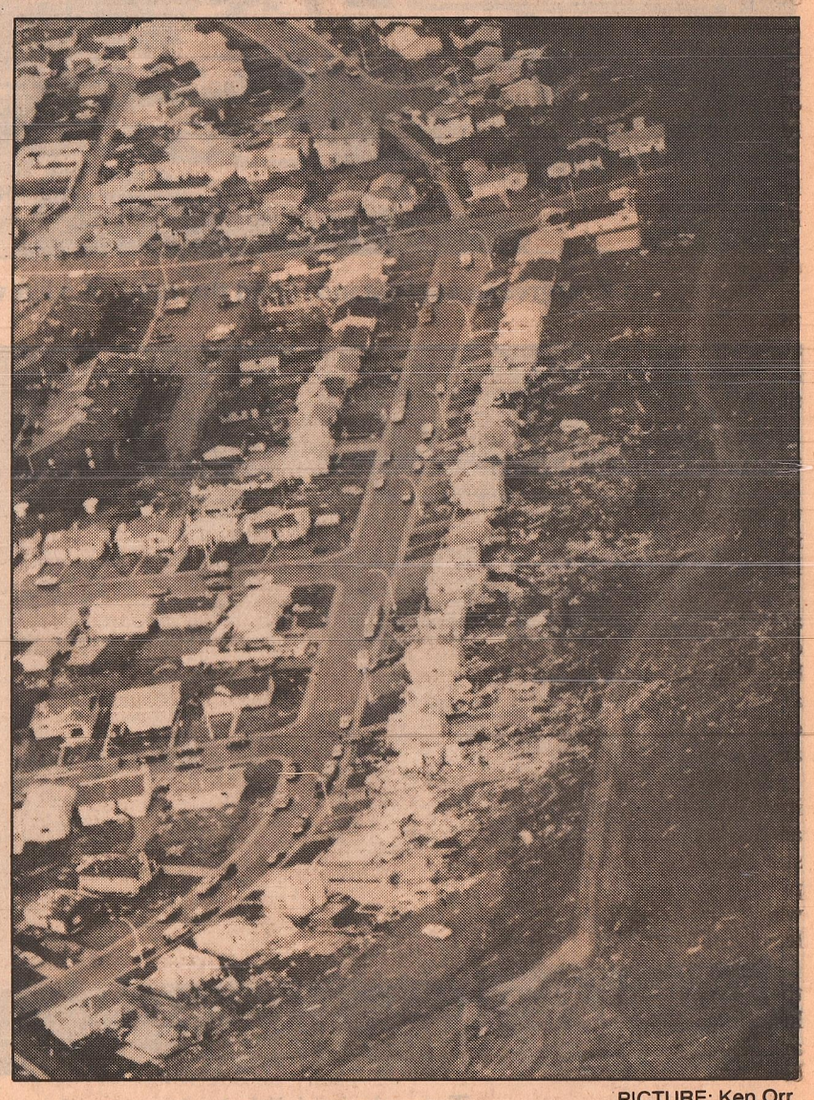
Extensive damage was wreaked upon the light industrial areas between 17th and 34th Streets and south of the river. A number of buildings were twisted piles of steel and rubble, and many more were missing portions of their roofs.

Particularly striking was the damage to Byer's Transport at 28th Street and 76th Avenue, and Everall Construction Ltd., at 101st Avenue and 21st Street. Both seemed like they had been hit by a bomb, and at Byers, tractor trailers were tossed about it like so many toys.

Elsewhere, lumber was strewn about in lumber yards and wreckage and litter was blown into fields and onto roads.

Only Refinery Row escaped with relatively minor damage — one tank was blown east over railroad tracks and set down on a road south of Baseline Road. Another tank suffered damages, but remained standing.

Northeast of Beaumont, barns were flattened, and shingles ripped off rural homes. Large sections of woodlots and trees lining roads were laid to waste.



PICTURE: Ken Orr

Aerial view of the twister's path through a row of homes

Two hours of terror

Tornado leaves 7 dead, 150 injured in Strathcona

Industrial area worst hit likened to 'a war zone'

By BOB BOEHM
Journal Staff Writer

Friday's killer tornado swept through the western edge of the County of Strathcona, leaving in its trail a path of death and random destruction.

County Reeve Jim Common said at press time Friday night that seven people were confirmed dead and at least 150 people injured after being caught in buildings or vehicles during the storm.

The area of greatest destruction was an industrial area bordering the Sherwood Park Freeway and Baseline Road, between 17th and 50th Streets.

"It looks like a war zone," Common said after viewing the area late Friday night.

"There's complete buildings that are literally history. . . There's cars and trucks and vans that have been flipped and turned and tossed everywhere.

"It's mind boggling."

Common put the county's disaster services plan into effect mobilizing key county officials to their Sherwood Park administration office, shortly after the tornado ripped through.

After checking the seriousness of the situation, a state of emergency was declared for the whole county at 4:38 p.m.

RCMP police, paramedics, fire department officials all joined in efforts to save people and treat the injured. About 100 volunteers were also notified and put on standby.

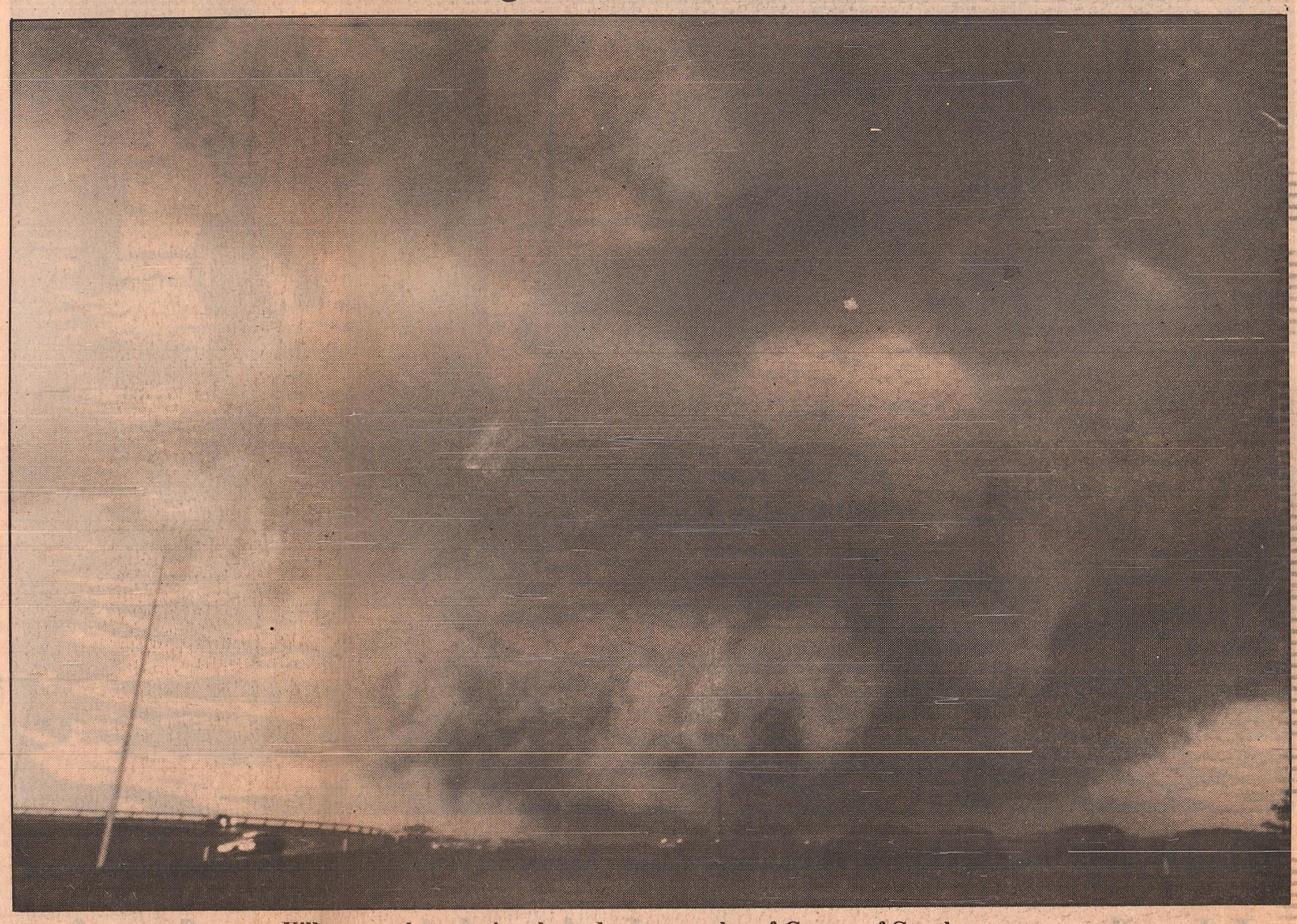
Four teams of seven RCMP members and a police dog were still digging through the rubble of flattened buildings late Friday night, trying to find survivors of the natural disaster.

"They expect it's going to be a long night, because with the amount of destruction, they'll have to go through every building they can find."

The force of the tornado was so strong that a several cars of a freight train were blown off the track near the Strathcona Science centre, he said.

Several other cars were separated from their wheels by the sheer velocity of the wind, he added.

Some RCMP members watched the tornado coming directly towards Sherwood Park and at the last minute, veer toward the industrial area, Common said. "I don't want to think what would have happened if it had gone through the city (Sherwood Park)."



Killer tornado sweeping through western edge of County of Strathcona



Tornado victim along Sherwood Park freeway taken for medical attention

Tornado casualties couldn't believe it was happening

By MARILYN MOYSA
Journal Staff Writer

The scene at Royal Alexandra Hospital Friday evening resembled a war zone, with casualties streaming in late into the night.

Byers Transport employee David Tripp described the emergency room as "chaos."

"They're just fixing people as fast as they can and moving them out," he said.

Describing his experience earlier Friday, Tripp said he thought Byers secretaries were joking when they ran into the shop Friday afternoon, yelling that a tornado was coming.

"Then the power went, and all the windows started popping, and the doors and freight in the shops started flying around," he said.

Tripp said he was sheltered by part of the building, which fell where he was thrown.

The building was flattened, said Tripp, who suffered extensive cuts and bruises.

After the tornado, Tripp said, the street was littered "with cars turned all over the place, trucks and semis and people."

Mill Woods resident Rick Self said he and a friend stood and watched one of the tornadoes begin.

"We weren't taking it too seriously until it started to form a cone," he said.

Self said the tornado took his neighbor's roof, but left his house alone.

"I've never seen anything like that in my life," he said.

"That was amazing, I'll never forget it."

Kevin Solonenka, who survived the flattening of Laidlow Waste Systems, said he saw many seriously injured people in the emergency ward.

"I saw one man brought in who had boards sticking out of his back," said Solonenka, who suffered a twisted back.

He said no one at Laidlaw originally thought the tornado would hit their building.

But when it did, "everyone panicked and ran to the back of a brick-walled room", he said.

The building "came down like tin foil," and Solonenka said he was buried under about six feet of bricks.

"All I could think of was my wife when I saw the roof ripped off."

After he got out, Solonenka said he found his Oldsmobile a block away from where he had parked it.

Hospitals respond with despatch to tend storm emergency victims

By Journal Staff Writers

The University of Alberta and Royal Alexandra hospitals bore the brunt of Friday's storm emergency, treating at least 140 people over the course of the evening.

Several other area hospitals activated their disaster response plans in anticipation of busloads of injured but ended up treating fewer victims than they had feared.

At the U of A, dozens of ambulances began arriving around 4:30 p.m.

The disaster plan was stood down at about 9 p.m.

By 10 p.m., 69 casualties were treated. Twenty-nine persons were admitted, of whom 12 to 14 were in very critical condition with multiple trauma.

Forty people had minor injuries and were treated and released.

Most of the injuries were lacerations, chrushed limbs and internal injuries, said spokesman Joyce Law.

Some of the first casualties to arrive appeared to be workmen, one with a tape measure on his belt, one still wearing a hard hat and ear protectors. All seemed dazed and were soaked with water and mud.

One man in his 50s was rolled into the ward on a stretcher with an oxygen mask over a pale face streaked with dirt and blood. His pillow and blanket were stained with blood and the fingers on his left hand badly cut.

Another man was hurried through the hall in a wheelchair, his head and jaw heavily bandaged and his right arm in a sling with blood seeping through.

As news flashes on waiting-room televisions brought home just how devastating the tornado had been, one woman exclaimed: "This just doesn't happen in Edmonton."

The Royal Alex put its disaster plan into effect by 6 p.m.

Hospital spokesman Ed Downing said at least 80 people had been treated by 10:30 p.m.

Downing said "quite a few" people had to have emergency service.

The hospital cleared 80 beds — in which there were recovering patients — to accommodate the emergency patients.

Edmonton General Hospital spokesman Sandy Sereda said staff there responded to the emergency without being asked.

"Our staff were super. They were lined up in the hallways, waiting for us to tell them what to do. Doctors came in from miles around."

The downtown hospital called off its emergency alert about 8 p.m.

The General was prepared to receive 80 casualties and had set up beds in its auditorium. Only 15 to 20 arrived over the course of the evening.

Five people were admitted to the General.

The Misericordia Hospital received only 15 storm victims, with minor injuries said a hospital nursing supervisor. All were treated and discharged.

The staff's response to the emergency was heart-warming. "More than 120 registered nurses came in on their own," said the supervisor.

"Many of our volunteers came in and the medical staff all returned."

Charles Camsell Hospital had seen 24 storm victims at press time.

They had admitted four at that point, and one was in the operating room.

"A lot of the injuries seem to be minor, but we are still assessing them," said the hospital's associate administrator Jean Newman.

She said some of the institution's staff were called in, but others came in on their own.



Emergency personnel rush injured to hospital from refinery area

Two hours of terror



PICTURE: Mike Pinder

Looking like a river rather than a street, the underpass at Jasper Avenue and 110th Street had cars stalled and submerged

Underpasses awash in 44 mm of rain

By MATTHEW McCLURE and BRIAN LAGHI
Journal Staff Writers

Underpasses on at least five major roadways in Edmonton were flooded Friday after more than 44 mm of rain was dumped on the city in a four-hour period.

Traffic was backed up for blocks on Fort Road, Whyte Avenue, 97th Street, Yellowhead Trail and Whitemud Freeway as commuters ploughed through axle-deep water on their way home, said Terry Murphy, the city's director of roadway operations.

Motorists were urged to stay at home Friday night, so as not to hinder crews in their clean-up efforts and to leave routes clear for ambulances taking injured people to hospital.

"It's one awful mess," said Murphy, "what with the stalled cars and blocked storm sewers."

Although there was an estimated 50-cm rise in water levels of the North Saskatchewan as the result of rains, officials with disaster services said there were no reports of flooding.

Meanwhile, a spokesman for the city's water and sanitation department said workmen spent the night, and will likely need the rest of today, working to clean out 194 city basements that were flooded.

Another 66 streets were flooded by the first storm, which hit around 4 p.m., said John Vos, superintendent of the city's drainage network.

Ironically, the city didn't have one complaint of flooding in the hard-hit Mill Woods area, Vos said.

"There's no denying it; the sewer system was filled right up to the manhole covers," he said. "The system just wasn't able to handle it all."

The first storm also blew off 300 manhole covers, Vos said. Main thoroughfares hard-hit included 137th Avenue, the Yellowhead Trail and Fort Road.

Heritage Fest picks up pieces, opens Sunday

By AL TURNER
Journal Staff Writer

The Heritage Festival will likely proceed on schedule despite Friday's tornado and massive damage to the site in Thursday's freak windstorm, say event organizers.

Only a few of the tents were damaged in Friday's storm, said Nena Timperley, chairman of the board of the Heritage Days Festival.

"They worked quite late last night . . . We'll see how it goes tomorrow," Timperley said.

Alan MacLean, president of the Edmonton Heritage Festival Association, said a "bit of a tornado" touched down Thursday in Hawrelak Park uprooting many of the large tents that had been set up in advance of Sunday's opening.

"It lifted four tents up and sent them four different ways," he said. "One ended up on top of a lamp post.

"They weren't just blown over, they were thrown across the road," he added. "One was hurled in the air and landed on top of another tent."

MacLean said seven of the on-site tents were damaged beyond repair Thursday and 17 others would require major repairs after the festival ends on Monday.

A Journal tent, which will be used as a dropping point for foodstuffs for the Edmonton Food Bank drive, was also heavily damaged but is expected to be repaired in time for the festival.

MacLean estimated damage Thursday at $50,000, much of which is covered by insurance.

He said about 40 volunteers worked through the day to rebuild the site and the Edmonton Klondike Days Association provided tents to replace those that were damaged.

"We've always called ourselves the volunteer capital of the world, and today we're proving it," MacLean said from the Hawrelak park command centre. "We will open on schedule. We owe that to the groups."

The two-day festival, which features the cuisine and culture of 43 different ethnic groups, is scheduled to open at 10 a.m. Sunday although the official ceremony will not take place until noon.

During the festival, which is expected to draw as many as 350,000 people, organizers hope to beat the world's record for most people in a conga line.

The record of 8,559 was established by a British and Irish caravaning club in 1982.

A special citizenship court will be held in the park Monday afternoon.

Hawrelak Park has been closed to private vehicles and will remain that way until after the festival ends about 10 p.m. Monday.

Edmonton Transit has established six park-and-ride locations: the northwest lot of the Southgate Shopping Centre, 111th Street and 51st Avenue; the southeast lot of Westmount Shopping Centre, 112th Avenue and Groat Road; the northwest lot of the Meadowlark Shopping Centre; 90th Avenue and Meadowlark Road; the Burns lot, 120th Avenue and 71st Street; Jubilee Auditorium, 87th Avenue and 115th Street; and at 116th Street and Jasper Avenue.

Transit spokesman Llew Lawrence said all transit passes and bus transfers will be honored. Drivers will not provide change.





All over the city, people ran to escape the pelting rain; some of the lucky ones were able to huddle in bus shelters

Hapless pedestrian braves high wind and heavy wind

Surprised, drenched, pummelled — but safe

By JAMES PARKER
Journal Staff Writer

Karina Fong struggled out of her Camaro at the intersection of 100 Avenue and 102 Street in front the Green Brier Motel.

She said she encountered the water "a few seconds after I got out of the car park."

"I didn't realize the water was so deep," Fong said.

"It was so black that we drove right into it," said Mari Anne Zeman, who had her Cougar trapped in the same puddle.

Mari Anne seemed slightly dazed and didn't know whether to wait the storm out or call a tow truck to pull her car away.

Eric Lund's head was covered by bumps caused by hail "the size of golf balls."

Lund is a courier who was caught downtown when the storm hit.

A decidely dry Joe Horvath, another courier, wisely opted to sit the storm out in a doorway.

Rob Changarathil and John Peng, both 15, were spending their afternoon watching the Edmonton debut of the latest James Bond adventure, The Living Daylights, when the lights went out twice. An usher had to explain to the crowd why the film was interrupted.

A drenched Christine Black, 16, was walking to work when the storm hit. She said she had to wade through puddles four feet high near High Level Bridge.

Joe was skateboarding home when the storm hit. "I didn't expect it, it was so nice."

He said the hail was punishing people unlucky enough to be caught out in the storm.

"Outside the bus shelter we saw big ones coming down," he said.

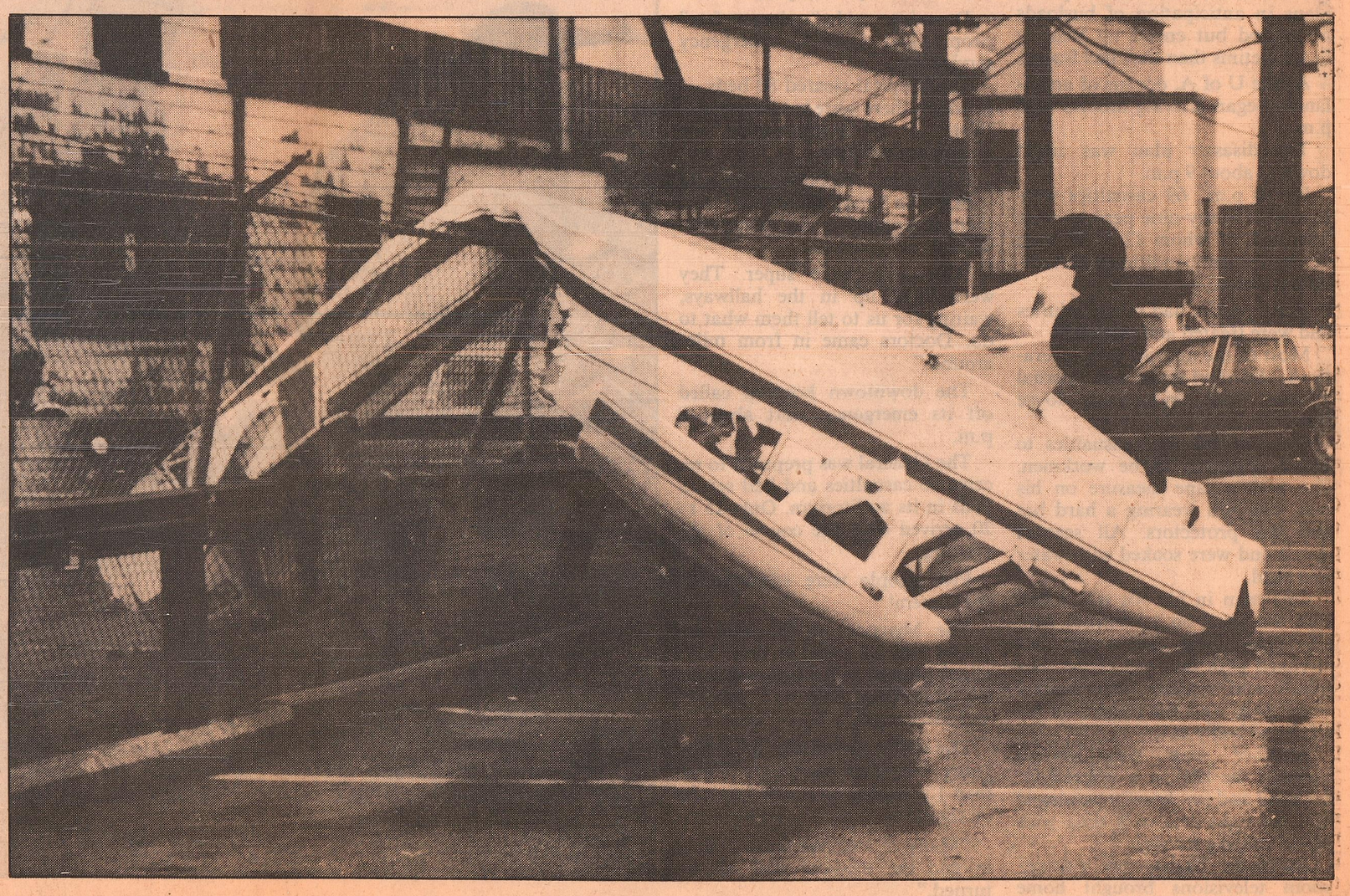
Diane Innes was finished work and headed for a bus stop on Jasper Avenue when the rain began.

"I wanted to get home, it's safer at home."

Thirteen-year-old Waqar Ali was enjoying a sunny afternoon cycling downtown when the storm started. He was looking for a pay phone so he could contact his parents to give him a ride home.

Business was down at the Gord McKenzie's downtown ice cream stand because of the storm.

McKenzie and assistant Michele McEachern watched people running for cover during the unescapeable deluge.



Aircraft reduced to twisted wreckage

Hundreds hurt in destruction 'worse than war'

Toronto Star August 1/1987

Edmonton tornadoes kill 30

EDMONTON (CP) — At least 30 people were killed and hundreds were injured when tornadoes sliced a path of destruction through the eastern part of Edmonton yesterday.

Fleets of ambulances ferried the injured to hospitals through debris-clogged streets. It was feared many were still buried in the wreckage.

Funnel clouds touched down repeatedly and left a trail of destruction and debris behind that looked "worse than war," one witness said. The raging winds smashed buildings, tossed cars around like toys and uprooted trees.

☐ Dramatic photo of tornado/A3

Edmonton Mayor Laurence Decore declared a state of emergency. Damage was estimated in the millions.

One man said he saw trucks and houses flying across a street as he drove home from work to the suburb of Millwoods on the city's southeast flank.

Dale Campbell said he helped several badly injured people to ambulances.

Decore said 27 people died in the city itself and Jocelyn Tennison, spokesman for the County of Strathcona, just south and east of the city, said three are confirmed dead there.

Decore said 24 of the Edmonton deaths occurred in a trailer court flattened by the twisters. Tennison said 150 people were injured in Strathcona.

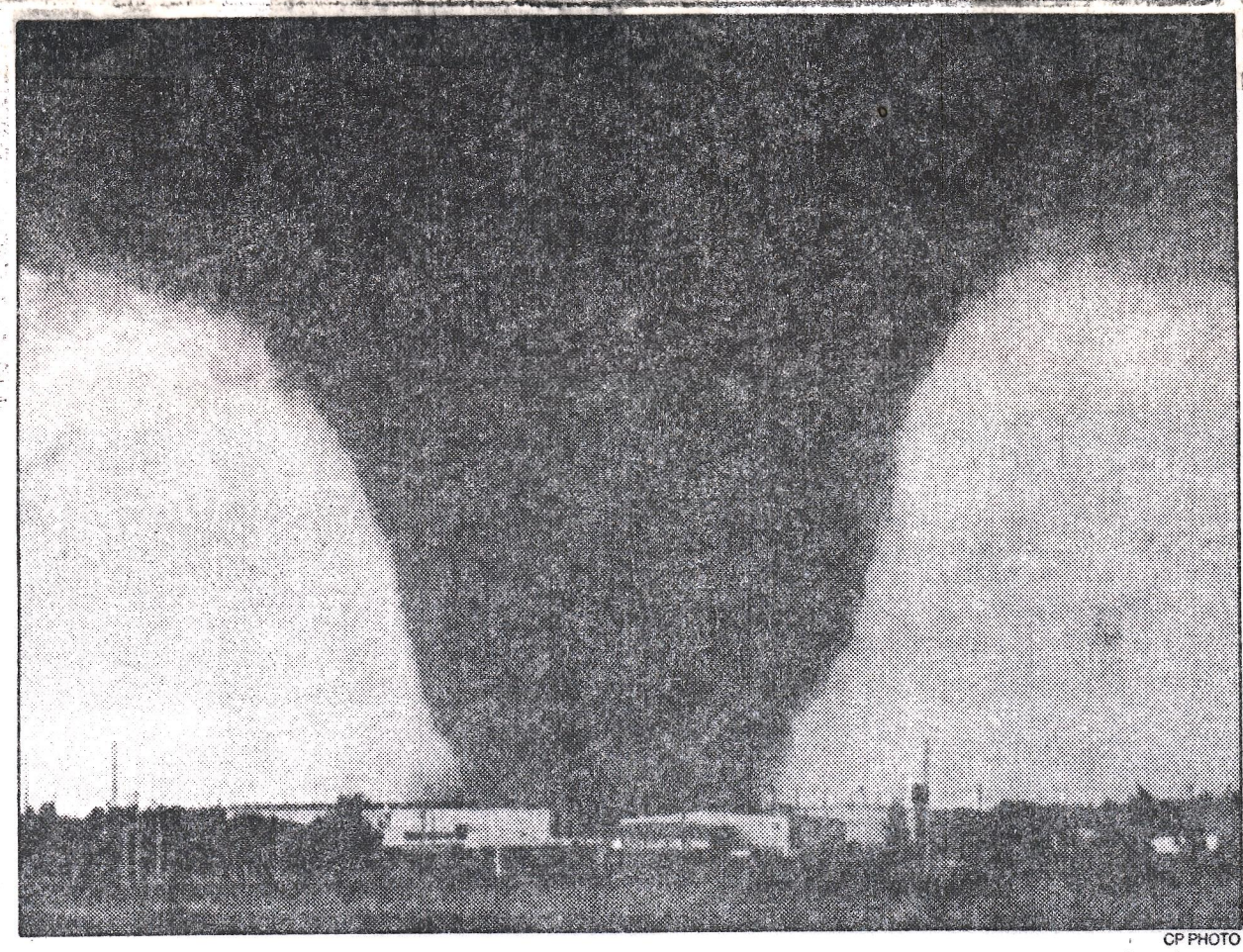
The tornadoes tossed cars around on expressways swelled by motorists heading out of the city for the holiday long weekend.

Witnesses said badly mangled bodies littered the roads.

Keith Cox, a reporter who reached the scene after the storm passed, described destruction "as far as the eye can see."

"Debris is strewn everywhere," he said. "Trees are tossed. There are buildings where a wall has caved in and a roof has

See DOZENS/page A3



CP PHOTO

Deadly twister: A huge tornado rips a kilometre-wide swath through east Edmonton yesterday, leaving dozens of people dead and hundreds more injured. Funnel clouds touched down repeatedly, smashing buildings, tossing cars around like toys and uprooting trees. A trailer park was flattened.

Toronto Star Aug 1 '87

Dozens are killed, hundreds injured as tornadoes rip through Edmonton

Continued from page A1

collapsed on top of it.

"There are buildings that have been struck by fire because the gas mains have blown.

"It's in the middle of an industrial district, and it looks like hell."

A resident on the outskirts of the stricken area said she saw cars flipped on their roofs and burned out. "The only way you could tell they were cars was that their wheels were sticking up."

Tom Harding, another area resident, said the storm hit with a deafening roar.

He said the destruction is "worse than war."

All Edmonton police and fire crews were called into emergency service and all hospitals were placed on full alert.

Repair crews cut off gas mains leading into the worst-hit areas.

Initial rescue efforts were hampered by repeated thunder squalls which swept over the city like breaking waves. The downpour flooded underpasses throughout the city, leaving cars marooned. Mountainous black clouds streaked with jagged bits of lightning loomed over the city.

The winds blasted at least a dozen cars from a stationary CN Rail freight train on a siding in the Refinery Row area in the eastern part of the city.

Two yardmen who sought shelter in a boxcar in a nearby railyard as the tornado approached were injured when the car blew over.

A CN switch-manufacturing plant in the area was demolished, but the 35 workers in the plant got out safely.

The Esso refinery in east Edmonton was damaged, but officials said there were no leaks of fuel.

Rescue workers mobilized cranes and bulldozers to clear wreckage as they searched for trapped victims.

The tornadoes hit in the midst of a vicious storm which flailed the city with high winds, torrential rain and rattling hailstones.

The city telephone system was in chaos, clogged by frantic calls.

In northeast Edmonton, stores in a shopping mall were closed and employees and shoppers were shepherded to safety in the basement. They stayed there until the final storm system blew through the area.

Sunday Star. Aug. 21 87

Frenzied hospital looked like a wartime casualty ward

By Darcy Henton Toronto Star

EDMONTON — For several hours, the emergency room of the Royal Alexandra Hospital was like a scene from the television show M*A*S*H.

The disruptive thud of a helicopter rotor at the top of the emergency room ramp pounded above a background of anguished and often hysterical voices in the room just a few footsteps away.

Ambulance attendants raced down the ramp time and time again, clutching injured infants and pushing wheeled stretchers in a life-saving frenzy as the chopper took off and landed in gusting winds with only inches of room to spare.

In the space of a few chaotic hours, a dozen harried doctors and two dozen nurses treated more than 120 tornado victims at the busiest hospital in town.

For the emergency room's Dr. Donald Nixon, it was a night to remember as the skilled medical team worked calmly amid pandemonium.

In one half-hour stretch, 15 patients — more than half of whom were seriously injured and emotionally upset — arrived at the 917-bed downtown hospital.

"When standing back a distance there's no question it appeared chaotic, but the basic principle of emergency management was there," Nixon said.

Extensive injuries

"The victims were confused, agitated . . . and to some degree hysterical," he said, and the biggest problem medical staff faced was keeping them and their relatives relaxed.

Four patients were admitted in critical condition, one was serious but stable, and 10 required immediate surgery for injuries that closely resembled those of car accident victims.

Deputy medical examiner Graeme Dowling said about four of the 25 people killed during the tornadoes had injuries so extensive their families were not allowed to see them.

"We would never ask a family member to come in and view them because of facial damage that would be terribly traumatic for them; and their opinion of who the person was could not be relied upon," he said.

Some witnesses said they saw victims with their faces torn off.

Chief medical examiner John Butt said most of the dead suffered a number of severe blows of which several could likely have been fatal.

"The majority of the bodies have been subjected to blunt-force trauma," he said. "In many cases there were chest, rib and lung injuries, hemorrhages of major vessels and broken bones and skulls. I think in most cases death would have been instantaneous."

Butt said the fatal injuries were likely caused by the force of the victim decelerating or being hit by objects or both.

Royal Alexandra Hospital patient Dix Duncan, 22, said it was as if someone had battered every part of his body.

Howling winds

He said he was reclining on his bed in a rented Evergreen Trailer Park mobile home when howling winds picked up his home and dashed it on the ground.

"I looked out the window and saw all kinds of things flying in the sky and then the trailer just started tumbling over and over," he said from the hospital's third-floor general surgical ward where he is recovering from shoulder, leg and foot injuries.

"It was just awful. I thought I was going to die."

Duncan, a cosmetics salesman who had planned to return to instructing gymnastics next week, said he was unconscious, but later somehow crawled from the wreckage of the destroyed trailer and into a neighbor's arms.

He was treated almost immediately by a paramedic on the scene and was rushed by ambulance to the Royal Alexandra.

Another resident of the mobile home park, where 350 of 600 trailers were destroyed or damaged, sat with her head bandaged, a blood-soaked bandage wrapped around her left foot and her right arm in a sling.

She didn't want to identify herself but said it was her birthday.

"It started to rain and a little bit of hail," she said. "You could see it lifting up dirt and lifting water off the road.

Edmonton opens its heart to victims as tornado leaves hundreds homeless

Continued from page A1

donated hotel rooms. Restaurants supplied free food. The Red Cross set up emergency shelters for the homeless. The Salvation Army handed out blankets and comforted survivors.

The public response to calls for blankets, clothing, toiletries and the like was so overwhelming that organizers issued a plea that people stop their donations until the initial supplies could be sorted.

A blood bank set up at the University of Alberta finally turned people away.

Offers of aid had poured in from across the country.

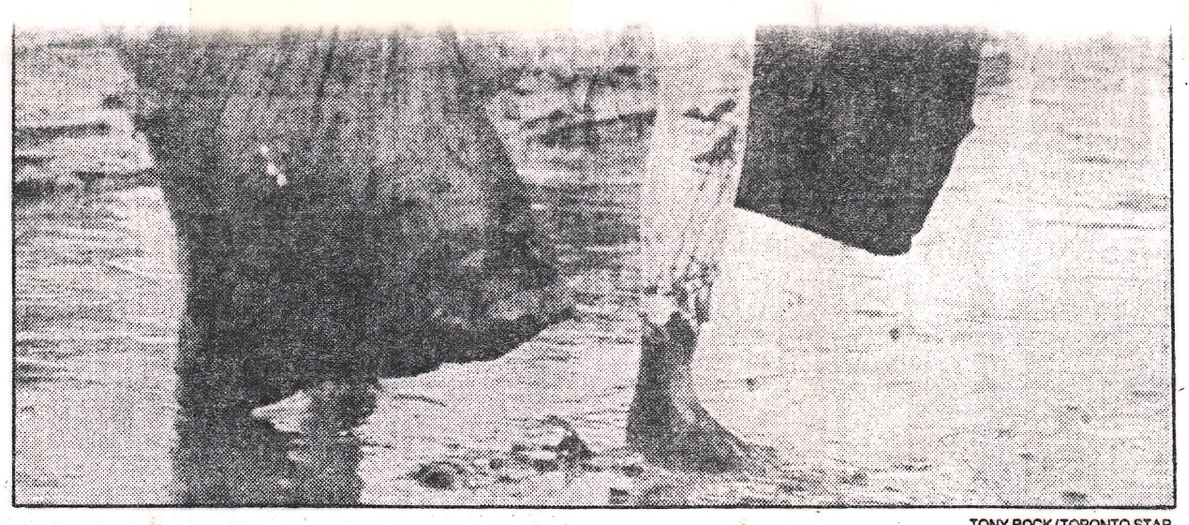
Prime Minister Brian Mulroney pledged the federal government will do whatever it can to help the survivors put their lives back together.

Mulroney said Canadians feel "shock, grief and sadness" at the tragedy.

Deputy Prime Minister Don Mazankowski and External Affairs Minister Joe Clark — both Alberta MPs — flew over the ravaged areas and promised federal money as soon as the province officially asks for it.

A sombre Premier Don Getty, who toured the scenes of destruction with his wife, Margaret, also promised financial support from the Alberta government.





TONY BOCK/TORONTO STAR

Belongings saved: Lisa Eiddiscomb treks through mud after salvaging some belongings from her mother's home. Trees surrounding the trailer park were draped with clothes, twisted strips of aluminum siding and shreds of pink insulation after the tornado hit.

this before," said Getty.

"It's painful," his wife added.

As he trudged across the muddy trailer park, the jeans-clad Premier knelt to pick up a soiled snapshot of a family, slipping it into his pocket. He then turned to comfort his wife, who was on the verge of tears.

The tornadoes darkened parts of the city as if the Apocalypse was at hand, then poured heavy rain and hail, hiding from the view of most the lethal funnel clouds that hit in at least five main spots.

When they touched down, they tossed cars at will, whipped homes down roadways, blew roofs and windows from those not directly in the path and wiped out industrial buildings in Edmonton's so-called Refinery Row.

Survivors from different areas told similar stories of thunderous gloom, a rushing sound like a vacuum cleaner and sudden destruction.

The tornadoes created the most havoc at the Evergreen Trailer Park in the city's northeast, where it tossed the mobile homes into the air. There 14 people died and 200 mobile homes were destroyed and 150 damaged. The park was a field of twisted wreckage and debris.

But the tornadoes cut a selective swath through the trailer park, demolishing some homes while leaving others across a street intact.

Wiped tears

The first warning from Environment Canada came only 23 minutes before the initial twister touched down.

Edmonton Mayor Laurénce Decore — wiping away tears as he surveyed the damage — said in a voice breaking with emotion that even 15 more minutes of warning would have saved lives in his city.

But as 18-year-old James Clarke said: "No one can ever be ready for something like this if you've never had one before."

The swirling black funnels had ripped off roofs, blew out concrete walls and hurled a telephone pole like a spear through a brick wall.

Most of the city was lashed by torrential rains. Buses and cars were marooned in flooded underpasses and a section of the city's light rail transit system was washed out. Pressure built up in overloaded storm sewers and popped open manhole covers.

Rescuers using long, metal rods probed and sifted through the wreckage in a grim search for bodies.

Some of the trailers were destroyed and only jagged piles of ruin remained on many lots.

Chief Medical Examiner Dr. John Butt said 11 bodies have yet to be identified and there's a list of "less than 50" people who have been reported missing.

After the park was first hit, residents peeked from the carnage to search for loved ones, they were warned another funnel cloud was on its way and they were whisked into buses unaware — in many cases — if family members were dead or alive.

Medical examiners' officials are going through the painstaking process of trying to match general characteristics of the missing people with the bodies they have yet to identify.

The number of actual missing will be far fewer than 50, because they were vacationing out-of-towners who could not be contacted by anxious relatives, Butt said.

The city yesterday was a series of conflicting, dramatic images.

Some people continued the vigil begun the night before, awaiting word on family members and friends who had perished in the storm.

Others received news they had been dreading.

The news yesterday that two young children were pulled from the rubble of the Evergreen Trailer Park lifted some of the gloom.

The tornado tragedy also brought to light a number of stories of uncommon courage and heroism and a day-after realization that the death toll could have been much higher had the twisters charted a course a few kilometres to the southwest.

But yesterday's saga was largely the tale of the tens of thousands of Edmontonians who worked throughout the night and gave up the first day of a holiday weekend at aid centres.

"I simply got to thinking, if I was in a situation like that and my kid was buried under a pile of rubble . . . well, you've just got to do something," said Herman Willekes, as he wheeled a cart of groceries into the Emergency Relief Service.

At 3 a.m. yesterday, some 50 volunteers were already at the centre, said founder Heather Airth.

The efforts of her volunteers were duplicated by the Edmonton Eskimo football team, which had solicited five tractor-trailer truckloads of food by mid-afternoon and the Red Cross, which was aiding the homeless at a motor inn down the road from the trailer park.

One anonymous, elderly man entered the relief centre early yesterday and handed Airth a stack of $20 bills, then walked away.

He had left $500.

Another called to say he manufactured children's clothes and could he help.

When his offer was accepted, he brought in four cases of brand new clothes.

Unsolicited, catering companies delivered food and soft drinks for volunteers and people who had never met before worked shoulder-to-shoulder through the night and early-morning drizzle.

'Feels good'

"It just feels good to help out," said University of Alberta student Greg Powlik, who was at the centre at 8 a.m.

"It makes you feel good about yourself and when you get down here and see everyone else working hard, it motivates you."

The homeless were grateful, if a little overwhelmed at the response.

One man who had lost everything, said volunteer Marlene Ritchot, came in asking for a pair of pants.

"He said he wanted just one pair, size 38 or 40," she said. "I finally talked him into taking two, but he said no more.

"He told me to help someone else."

As the day wore on, the tension brought upon by worry over the fate of family members or belongings was beginning to tell.

Brian Bowyer, 20, a gash on his forehead and his neck in a brace, told The Star how he saved his 4-week-old niece — but he still didn't know what had happened to his sister.

"I heard a sound I just can't explain," he said. "It was the sound from the worst storm you could imagine.

"I saw the sky go black through the window and then the whole window came out and flew right at me, just like in *The Poltergeist*.

"Miraculously, nothing hit me and the storm calmed briefly so I went to the back where my sister, her child and my father's girlfriend were.

"I picked all three up by myself, but after about three steps, the house lifted. It felt like a free-fall out of an airplane and somehow it was very peaceful and frightening at the same time.

"I dropped the girls and when I bent over to pick them up, I could see my sister was pinned, but as I bent over the newborn, I protected her from the ceiling as it began to cave in.

"When I woke up and saw light, Dorothy and Megan (his father's girlfriend and the newborn) were being pulled out with me.

"I still don't know about my sister."

Then there were the happy endings.

At Sherwood Park industrial area, where hundreds of buildings were destroyed, Andy Pawlenchuk was blown from the second storey of his building by the force of the twister.

He escaped injury and three hours later, police found his dog, Scamp, unharmed in the back of his truck.

Alberta disaster most vicious storm since '54 hurricane

From Canadian Press

The tornadoes that struck Edmonton Friday killed twice as many people as the twisters that hit Barrie in 1985, but 1954's Hurricane Hazel remains unparalleled in Canada for death and destruction.

The tornadoes that wrenched their way through Edmonton's southeast end killed 25 people and was the most vicious storm to hit Canada since 1954, when Hurricane Hazel killed 81 people in the Toronto area.

Hurricane Hazel cut a 300-kilometre (186-mile) wide swath around Toronto, causing more than $25 million in damage.

One of the worst natural disasters of this decade was a deadly trio of tornadoes that ripped through south-central Ontario on May 31, 1985, claiming 12 lives in the Barrie area.

Three separate twisters tore a zigzag path along a 100-kilometre (61-mile) route, leaving scattered pockets of devastation in its wake. Buildings and cars were torn apart and carried away.

Woodstock battered

Almost 200 people were admitted to hospital, many in critical

In 1981, Calgary was pummelled by hail the size of golf balls when a storm pounded its way through the city July 28, killing two golfers and causing more than $100 million in damage to thousands of homes. The golfers were killed after they took refuge under a tree that was hit by lightning.

The 20-minute storm produced more than 57,000 insurance claims — bringing one of the biggest payouts for a single incident in Canadian history, an insurance official said.

In August, 1979, Woodstock was battered by a tornado that ravaged the south end of town and neighboring countryside. Two people were killed and 142 injured.

Southwestern Ontario is one of the most twister-prone areas in Canada.

Abandon car, lie low if twister is sighted

WINNIPEG (CP) — If your home is in the path of a tornado like one of those that ripped through Edmonton, get to the basement or into a room with no windows.

"With high winds, glass blows out and that causes a lot of injuries," Cindy Stevens, of the Manitoba Emergency Measures Organization, said yesterday.

Since tornadoes generally travel in a straight line, the best way to avoid one outdoors is to walk or drive at a right angle to the

low ground, she said.

Cars can easily be picked up or blown off a road.

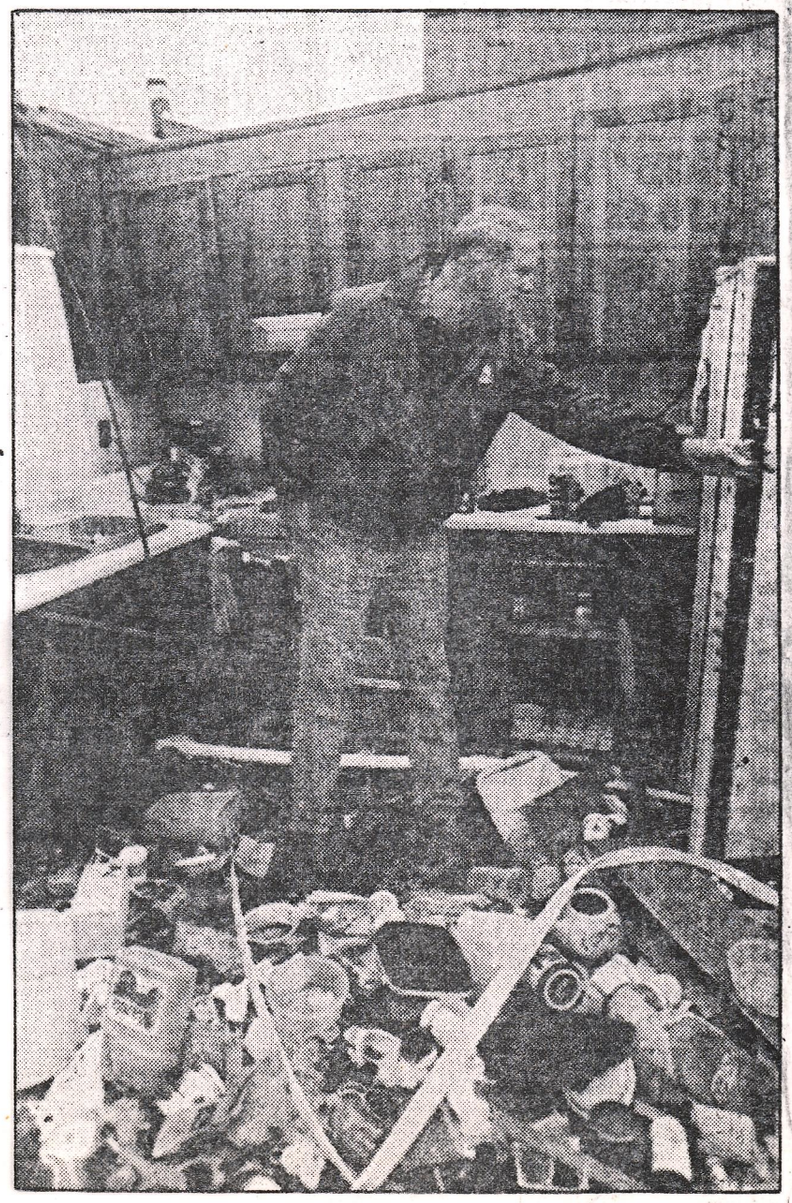
"I guess that's scary for a lot of people because they don't want to leave the security of their car — but that's a false security," Stevens said.

Barrie passes the hat for Edmonton

BARRIE (CP) — People in this central Ontario city know what it's like when a tornado rips through town — that's why they interrupted a summer festival yesterday to help out the battered residents of Edmonton.

"People around here are pretty sensitive to tornadoes," said local radio broadcaster Hugh Brown, referring to a trio of twisters that killed 12 people and ruined about 500 houses in the Barrie area in 1985.

Brown said people attending the Kempenfest carnival on the Barrie shore of Lake Simcoe began an impromptu fundraising drive early yesterday by passing a hat around. Brown said his station, CKBB, was working with a local television station to put together on-air advertisements seeking contributions to a relief fund for Edmonton residents.



CP PHOTO

Premier tours: Alberta Premier Don Getty examines the kitchen of a mobile home in northeast Edmonton that was demolished by the tornado. Only the kitchen was left upright.


the Saturday SUN

HOME TWISTER

DISASTER HITS

DEVASTATED!

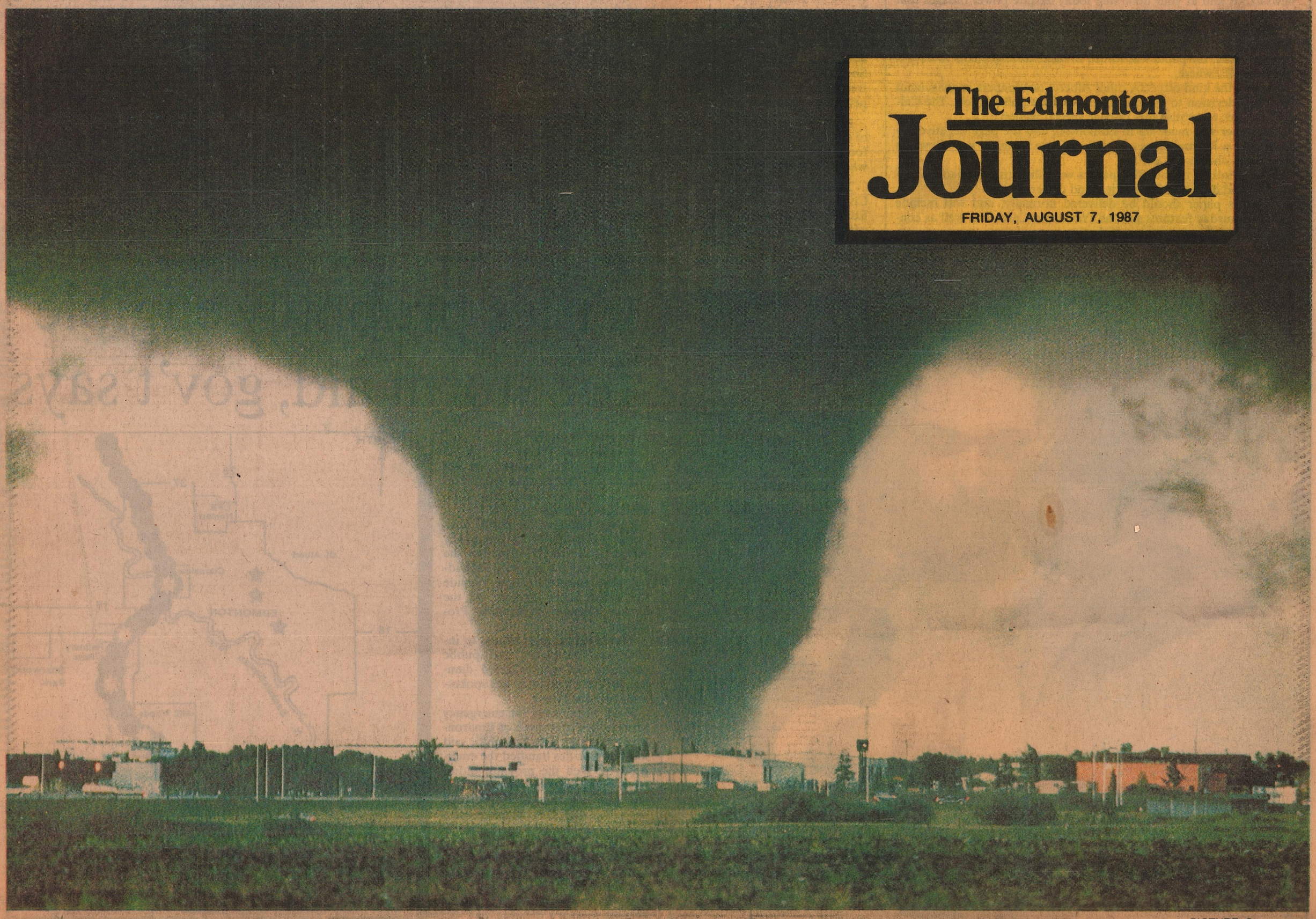
WORST DISASTER IN CANADIAN HISTORY: Edmonton's Evergreen Mobile Home Park lays in waste after the biggest natural disaster in terms, in Canadian history. Damage is estimated at over $150 million. Inset, Toronto Sun cover reports the twister that killed 26.

paul woodhouse, edmonton sun

For Steve
Thought you
Return to might
want it
Betty Arnolds
aunt
Betty

Two hours of terror

The Edmonton Journal
FRIDAY, AUGUST 7, 1987



PICTURE: Steve Simon

Fifteen of the 26 people who died as a result of Friday's tornado were residents of Evergreen Mobile Home Park in the city's northeast corner; others perished in a southeast industrial park

Tornado kills at least 26

By KIM McLEOD
Journal Staff Writer

Edmonton will remember July 31 as a day of carnage.

At 3:30 p.m., a killer tornado slammed into Mill Woods, ripping through the city's east end in an hour-long wrecking spree that claimed 26 lives and caused at least $150 million in property damage.

The twister chewed up houses, tossed huge trucks into the air like Tonka toys and buried its dead in makeshift graves, as buildings collapsed under the storm's fury.

Families were literally torn asunder by brute-force winds, which turned debris into flying spears that pierced and pummelled city residents without mercy.

One of the worst natural disasters in Canadian history, the tornado left a trail of death and destruction stretching about 30 kilometres.

Special Section

In response to many requests from Journal readers, we are reprinting this special edition on the tornado which hit Edmonton last Friday.

Included in this special supplement is updated information as well as original stories and pictures carried in The Journal in the days following the tragic storm.

Survivors of a south-end machine shop thought hell had descended upon them, as winds screamed through the building with a sound like a jet engine.

"It seemed like the end of the world was here . . . we all thought we were going to die," said Ted Gartner, who was in the industrial park when the storm hit.

The tornado hit three areas with a vengeance — a Mill Woods neighborhood, an industrial park between Edmonton and Sherwood Park, and the Evergreen Mobile Home Park in the city's north-east corner.

Fifteen of the dead were found in the mobile home park, where the two-block-wide twister demolished 170 of the 700 trailers in the park.

Seventy-five homes outside the trailer park were destroyed, thousands of homes across Edmonton were damaged and from 50 to 100 businesses suffered serious damage.

Power lines snapped, plunging the south end of the city into darkness, turning major intersections into demolition derbies without functioning traffic lights.

At least 12 cars from a CN Rail freight train were blown off tracks in a yard near 17th Street and Yellowhead Highway.

An ashen-faced Mayor Laurence Decore declared the city in a state of emergency at 6:15 p.m. All off-duty firefighters and policemen were called in to man rescue services. Hundreds of volunteers bolstered this force, to search for the living amid heaps of rubble.

Residents who were away from the trailer park when the storm hit rushed there to find their homes and loved ones had disappeared. As Albert William searched for his two children, he shouted: "I don't know where the hell they are."

Brian Bowyer last saw his sister, Kelly Pancel, 18, pinned between two trailers before he was rushed to hospital. Pancel, the mother of a three-week-old baby girl, did not survive.

Rescue workers were forced to turn the Happy Pizza and Steak House into a temporary morgue, while medical staff in a nearby store frantically worked on injured people placed on desktops.

The Royal Alexandra Hospital's emergency department resembled a scene from M*A*S*H, said Dr. Don Nixon. Helicopters ferrying the wounded landed at a steady pace as more than 100 people flooded the hospital with injuries.

Endless generosity by city residents, coupled with the discovery of two infants who clung to life under piles of wreckage, emerged as the only bright spots during the day.

Premier Don Getty, along with provincial and federal cabinet ministers toured the mobile home park Saturday, promising to cut red tape to ensure tornado victims receive prompt disaster aid.

Some trailer park residents were left without a trace of loved ones after bulldozers were called in to plow through rubble in the search for the missing.

Edmontonians spared the fury of the storm opened their hearts to the survivors through the relief effort.

Residents donated 350 units of blood and jammed the city's emergency relief centre with enough food, clothing and supplies to fill more than five warehouses.

Mayor Decore also called for a review of the Alberta Weather Office's warning procedures, saying the forecasters should have issued an earlier warning of the approaching funnel clouds.

But weather office meteorologist Dave Burnett defended the work of the weather officials by saying the warning was issued at 3:07, shortly after funnel clouds touched down northeast of Leduc.

By Sunday, the indirect affects of the storm became apparent — more than 1,000 people would be out of work and Strathcona County stood to lose $1 million in tax revenue from the damaged area.

Insurance officials, who toured the disaster site, have assured residents that 90 per cent of the damage to their homes will be covered.

Many of those who lived through the storm sought counselling to help release the pain and suffering they carried around inside them.

Provincial mental health officials warned that some survivors, while coping now, may suffer emotional upheaval for months to come.

Scott Chrisp is one survivor who knows this is true.

Chrisp tells a story he heard a young boy who lived through the storm, who dreams night after night about being snatched away by treacherous winds.

"The minute he falls asleep, he wakes up with a start, screaming 'Mommy, Mommy, I'm falling.' "



PICTURE: Karen Sornberger

In the tornado's aftermath, Meda Merriam salvages what she can of her household goods amid the bleak wasteland of Evergreen Mobile Home Park

Not even tornadoes can stop The Journal

This special storm edition of The Edmonton Journal is on the newsstands and at your door-step today despite power outages that prevented our presses from running.

With TransAlta Utilities officials predicting late Friday that power to our Eastgate production plant would not be restored until 10 a.m. today, the paper was forced to make arrangements to have it published elsewhere.

Despite the kind offers by other Alberta newspapers, management made the decision to ask our sister Southam publiciation, The Calgary Herald, to publish this 12-page special section.

The paper was made up in Edmonton, and the page negatives — along with a Journal press crew led by Dave Kealy — were flown to Calgary by chartered Lear Jet.

After printing, the bundled papers were then trucked back to Edmonton and dispatched to carriers and dealers.

Sunday's paper should be delivered normally, and will include regular Saturday features such as Travel and Careers as well as continuing coverage of the storm and other news.

Publisher William Newbigging said he was grateful to all staff and carriers for their "extraordinary efforts to get out this special edition."

An Editorial

Never has the need been more urgent

In the wake of Friday's storm which left scores of people dead and hundreds injured, Edmontonians' first thoughts must be of those families who have suffered immeasurable loss.

Hundreds have been left homeless in northeast Edmonton, Mill Woods and Sherwood Park as tornadoes unleashed their tremendous destructive force. Dozens of people are missing.

Mayor Laurence Decore has declared a state of emergency. Relief agencies are appealing for food; the provincial government has offered whatever help is needed.

That this tragedy occurred on the eve of the Civic Holiday weekend — a time at which Edmontonians have traditionally responded with unbridled enthusiasm to appeals by the Edmonton Food Bank — is darkly ironic. Never has the need for Edmontonians' generosity in providing food, shelter and clothing been more urgent. Never has the challenge been more daunting.

No Edmontonian has been left untouched by the profound tragedy which has occurred. For the victims of the storm — those who have lost family or friends or their homes — the pain must be immeasurable. For those Edmontonians who were fortunate enough to escape unscathed, the storm should serve to focus our thoughts and put them into perspective.

Too often, we become so wrapped up in our own concerns that we fail to notice the abiding suffering that goes on around us. We become so caught up in our despair that we tend to take for granted the enormous strength of the human spirit in the face of all adversity.

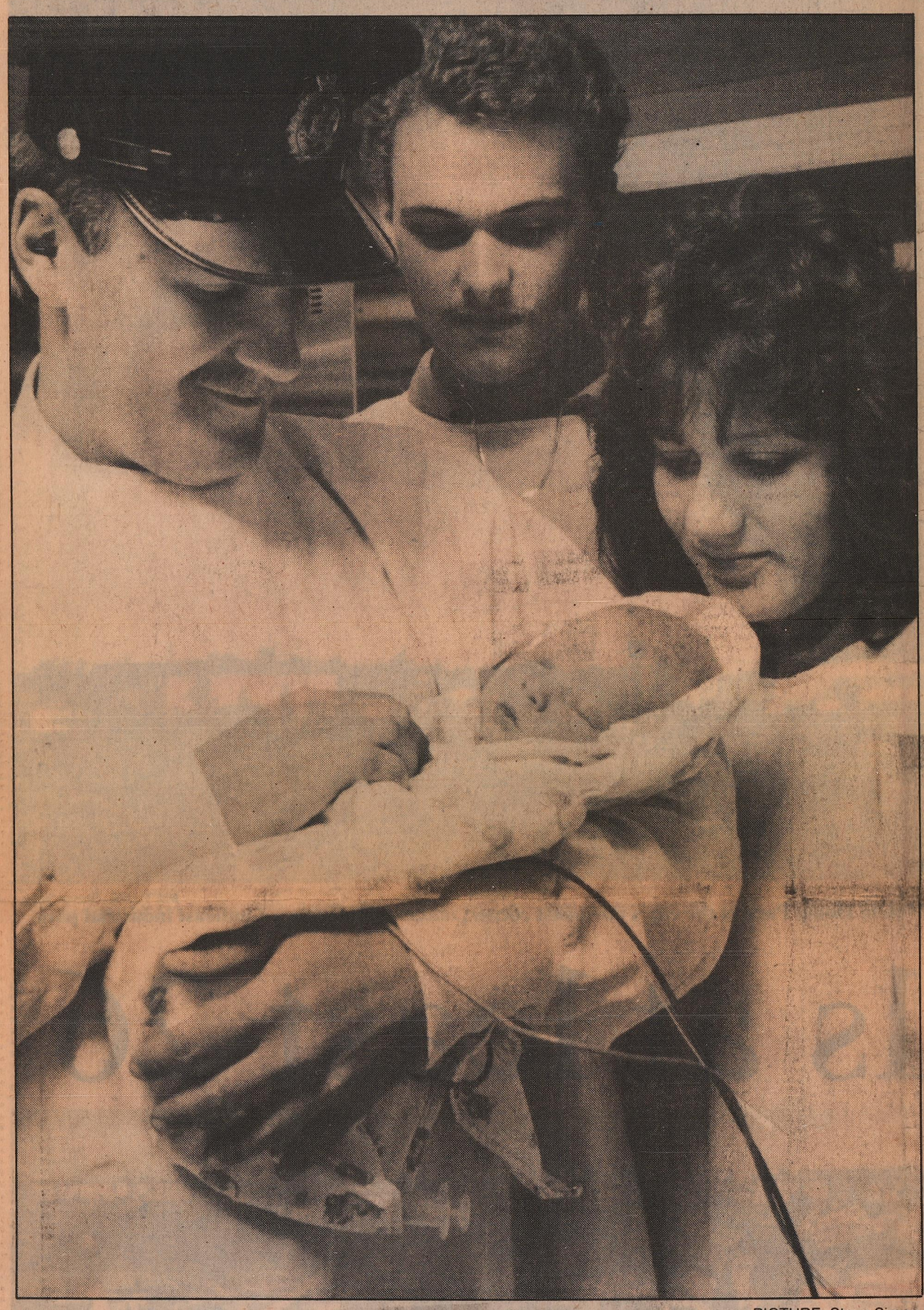
As the city recovers from this disaster, we will hear of the heroism of individual Edmontonians who risked their lives for the sake of others; of people who braved the storm in search and rescue operations; of doctors who worked tirelessly to save lives.

We will hear of the compassion of community groups and relief agencies who responded quickly and effectively to provide assistance; of individuals who opened their homes and their hearts to comfort victims of the storm.

Were it not for such selfless acts, the magnitude of this terrible tragedy might have been much greater.

The storm has passed, but the crisis is not over. In the days and weeks ahead, the resources of the community will be tested.

In the fine tradition this city has established, Edmontonians should respond to the full extent of their ability.



PICTURE: Steve Simon

Bill Clark holds baby Kristen Gregoire as parents Terry Smith and Monique Gregoire look on . . . *Clark, a police temporary acting sergeant, raced the baby to hospital after Friday's tornado*

Cities probably eligible for storm aid, gov't says

By ROY WOOD
Journal Staff Writer

Victims of Friday's severe storms who live in cities are probably eligible for provincial help, government spokesmen say.

Labor Minister Ian Reid, temporarily responsible for emergency services, said late Friday that the province may also provide individual assistance to people outside the urban areas covered by the Urban Disaster Assistance Program.

The program gives grants to individuals, businesses and public organizations who suffered damage, explained government spokesman Andrew Hume.

Reid, responsible for emergency services in the absence of Environment Minister Ken Kowalski, said local authorities handled the emergency so well the province didn't have to become heavily involved. He said the province provided some assistance in locating extra ambulances and other emergency equipment.

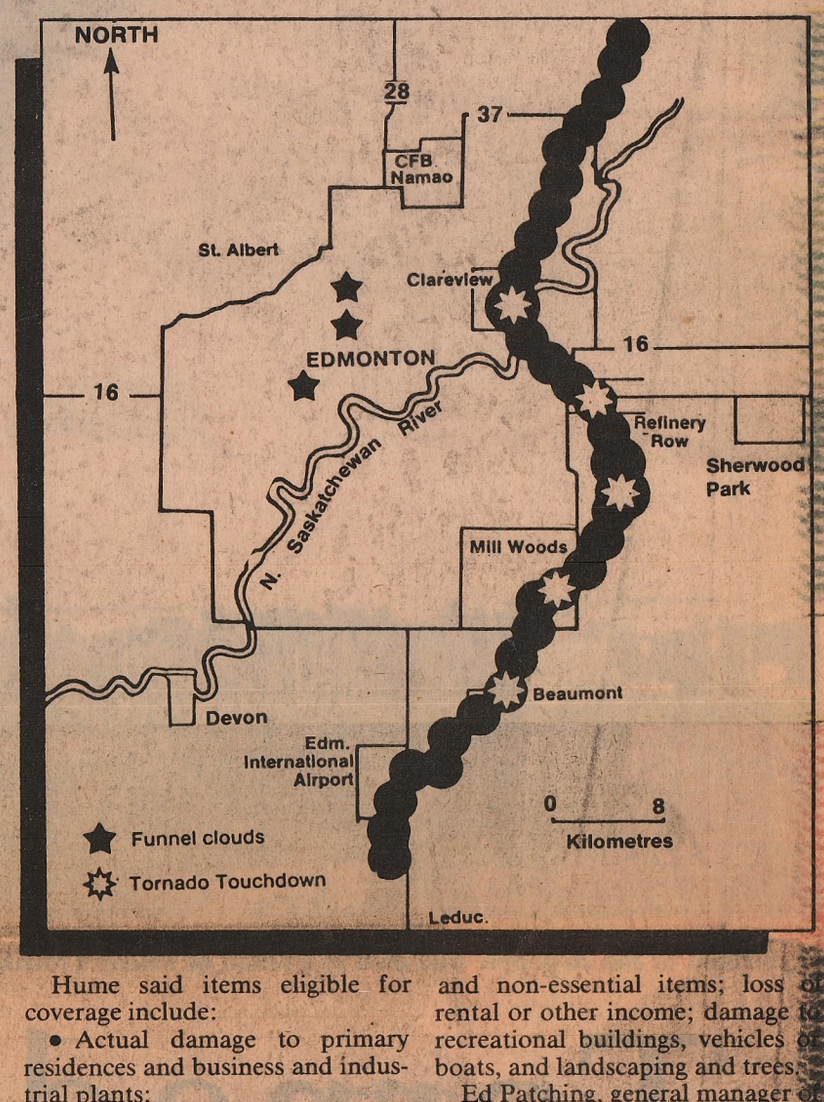
In an official government statement, Reid said: "The province will help the City of Edmonton, the County of Strathcona and their citizens in every possible way, including the provision of financial assistance."

He said the disaster plans of Edmonton, Sherwood Park and Strathcona County authorities were "extremely rapid and extremely effective . . . our role is to give every assistance that we can that they ask for."

Reid added the province is responsible for making sure areas outside the urban centres are protected during the emergency.

When the disaster is over, Hume said Alberta Public Safety Services will decide which areas are eligible for help, and then advertise times and places where victims may apply. He suggested those affected by the storms watch newspapers for notification.

The program usually pays 80 per cent of successful claims after a $1,000 deductible.



Hume said items eligible for coverage include:

- Actual damage to primary residences and business and industrial plants;
- Labor for the general cleanup of the damage;
- Rental of machinery or equipment made necessary for businesses to carry on after the storm;
- Water damage indirectly resulting from the storm; and
- Certain non-luxury household possessions.

Hume said each application will be assessed individually and the value of loss or damage will be determined by an independent appraiser.

Among the things that don't qualify for assistance: anything that was or could have been insured against the disaster; luxury and non-essential items; loss of rental or other income; damage to recreational buildings, vehicles or boats, and landscaping and trees.

Ed Patching, general manager of Alberta Hail and Crop Insurance, said he had no estimate of tornado and hail damage to crops.

He said about two-thirds of the agricultural acreage in the province is covered under the corporation's "all risks coverage" which includes tornadoes. However, that insurance protects whole crops, and minor tornado damage might not be covered.

Patching said most farm acreage is also covered by hail insurance.

The hail insurance program is paid for by premiums from farmers. The all-risk coverage costs are shared by farmers and the federal and provincial governments.

High-density growth increased potential for disaster—ex-prof

By GORDON KENT
Journal Staff Writer

Edmonton's concentrated population gave it the "potential for a disaster" from a tornado, a local expert says.

"We get more of these things than people think," said Keith Hage, a retired University of Alberta meteorology professor.

Over the past 20 years, an average of eight tornadoes a year have been reported in Alberta, mostly in rural areas, he said.

Tornadoes occur when warm, humid unstable air meets a cold front. This slowly-rotating air may begin to converge and spin faster, in the same way a figure skater spins faster if he pulls in his arms.

The twisters, accompanied by thunder storms, heavy rain and hail, can have winds moving up to 500 kmh. Most don't reach the ground, and if they do its usually only for a few seconds.

"I was concerned that with the growing area of Edmonton and Calgary, there was potential for a disaster coming up," says Hage.

There is little practical protection against the storms, one of the most powerful forces on Earth.

"To make a building tornado-proof, we're talking about something as well-built as a nuclear plant," he says.

The funnel clouds move erratically, and he doubts they will be predicted more than a few hours in advance in the near future.

However, the storm that hit Edmonton Friday was unusual because it had several funnels rather than one, he said.

Much of the destructive power of a tornado comes from the severe low pressure inside its rapidly-swirling winds. This creates such a pressure difference with air inside buildings that they "almost explode," he said.

People are advised to keep windows open to protect against this problem, he added.

Friday's storm is by far the worst in the province's history. The highest previous death toll was four people, killed at Grassy Lake in 1915. That toll was equalled in 1918 at Vermilion and again in 1950 on the Morley reserve west of Calgary.

Canada's worst twister cut through Regina in 1912, killing 28 people and injuring hundreds more.

Weathermen headed for cellar moments before tornado hit

By FRANCES MUTSUKA
Journal Staff Writer

Weather officers hurried to the basement of the Alberta Weather Centre Friday when a tornado came within 100 metres of their building.

They emerged from their refuge at 49th Street and 98th Avenue about 15 minutes later.

"We knew a tornado was possible, but it wasn't something we were really expecting," said Ken Nelles, weather officer.

The centre issued a severe weather warning for the Calgary-Red Deer area at 11:15 a.m. Friday, predicting "thunderstorms with large hail, damaging winds, intense lightning or heavy downpours."

The warning was updated at 2:45 p.m. to include the counties of Lac St. Anne, Parkland, Leduc, Wetaskiwin, Ponoka and the City of Edmonton.

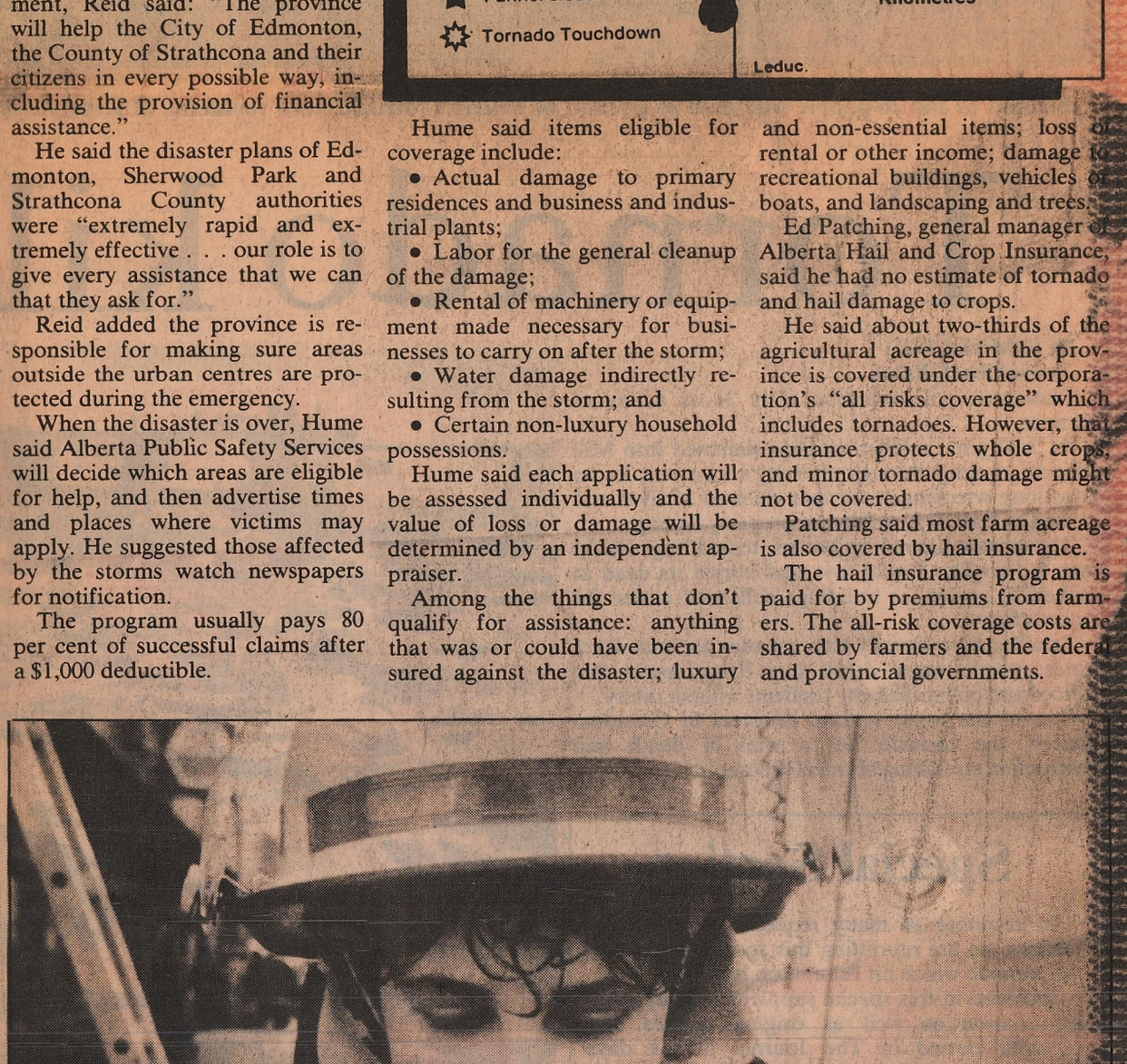
The thunderstorm "developed into a tornado in a matter of an hour and a half," said Nelles.

The weather office issued the first tornado warning at 3:07 p.m. when a caller reported a funnel cloud had touched down in Leduc.

"You almost have to have a confirmed report of a tornado before you can put out a warning because nothing shows up on the screen until it's actually there."

Shortly after the Leduc call, the office received a report that the tornado was spotted in Mill Woods. It continued to travel north and east, covering the entire length of the city in that direction, as it moved across the river and continued up into the 144th Avenue and 19th Street area.

Nelles estimated that the worst of the destruction had ended in Edmonton by 5 p.m.



PICTURE: Mike Pinder

Bedraggled pooch caught in the storm receives some brief comfort from a volunteer

Two hours of terror

Few treasures remain at Evergreen mobile park

By BRYANT AVERY
Special to The Journal

Darlene Dick was one of many distraught residents of Evergreen Mobile Home Park who recognized treasures in the rubble after Friday's tornado and feared the worst.

For her, it was a tiny stuffed animal lying in the mud beside a pile of furniture and wood fragments — all that was left of her home along 167th Avenue in north-east Edmonton.

"I was just talking to my daughter from work, about 2 p.m.," she said. "She was cooking a roast or something."

Dick's three children, aged 15, 12 and 11, were still unaccounted for two hours after the twister wiped out countless mobile homes in the 700-home park.

Sobbing, she repeated "Oh, my God. Oh, my God."

Thirty-six year old Albert William was also searching for two children.

When the storm hit, he had been at work at Canada Place but he knew his wife was in the hospital with a broken leg.

His six- and 10-year-old children, however, were still missing.

"I don't know where the hell they are," he said, and in the chaos of the hour disaster services personnel on the scene were unable to tell him where they might be or if they were alive.

"Holy ----, my trailer's gone," he said upon first seeing the devastation.

Like Darlene Dick, William identified the lot he knew to be his and recognized items that belonged to neighbors, but most of his own possessions — including he trailer — had vanished.

"I haven't even finished paying it off," he said quietly. "I finally get a job and get all this stuff and then all of a sudden it's gone."

The largest pile of twisted homes rose just east of William's spot, and there a dozen firemen and volunteers heaved aside hunks of sheet metal and household goods hoping to locate as many as five people reported missing.

There were at least three vehicles in the mound, ominously suggesting the occupants had been home at the time the twister dipped, skipping the greenhouses of Kuhlmann's Market Gardens and some of the mobile homes but flattening others next door.

Nearby, James Loucks and Gerry Churko frantically called for a woman they called "Mom," Mrs. Galding. Her trailer was upside down, the wheels and floor resting where the roof should have been.

Loucks said he could smell her perfume in the area where the sitting room was, and as the mocking sun began to come out at dusk, he was joined by rescue crews in his search.

Like the others, he didn't know if she was there, somewhere safe, or one of the casualties.

Rail cars knocked off tracks

By LASHA MORNINGSTAR
Journal Staff Writer

About a dozen railway cars, some of which had previously carried dangerous goods, were blown off the tracks by Friday's killer storm.

Canadian National Railway spokesman Alex Rennie said the incident was one of three CN Rail operations which were hit by the storm. The railway counted two workers injured in the mishaps.

Rennie said the derailed freight was stopped on the east Edmonton line that runs alongside 17th Street near the Yellowhead Highway when the twister hit.

"It was sitting in the siding southbound, waiting for clearance to proceed when the tornado blew 12 or 13 cars off the track," said Rennie. There were no injuries.

Five of the cars blown off were empty, but had previously contained dangerous goods. One had carried propane, and had a minor leak in the dome, but Rennie said CN's dangerous commodity experts said the leak was not serious and was easily contained.

The second incident involved a yard engine operating in the industrial park in the 60th Avenue and 17th Street area. Two crew members were standing beside the stationary train when they saw the tornado and climbed into an empty boxcar.

"The tornado toppled over the boxcar and the men were thrown out," said Rennie. The CN official said initial reports said one worker had a concussion and back injuries and the other was hospitalized with undetermined injuries.

The third CN-related incident saw a company plant destroyed.

"Our manufacturing plant — or I should say the manufacturing plant we had — was totally destroyed," said Rennie. None of plant's 35 people employees were injured.



PICTURES: Karen Sornberger

One injured CN Rail worker helped from boxcar

Relief efforts show city's heart

By GORDON KENT
Journal Staff Writer

Edmonton showed it was a city with heart by flooding relief agencies with donations of food, clothing and money after last Friday's disaster.

Within days of the killer tornado, five warehouses run by the Edmonton Emergency Relief Services Society were packed to the rafters.

"As I'm walking through, I don't think I can really grasp the magnitude of donations," said society founder Heather Airth. "It's just overwhelming."

One day after the disaster, she had to ask for a temporary halt to donations to allow volunteers to process goods already received.

She and 500 volunteers put in long hours over the weekend, sorting tonnes of food, mattresses, chairs, linen, dishes, appliances and clothing.

Tractor-trailers full of supplies were gathered at fire halls, churches and service stations across Alberta, then shipped to numerous agencies in Edmonton.

Concerned community groups, companies and individuals called from all over the continent asking how they could help.

About 350 people lined up for two hours to donate blood in the city the day after the tragedy, and another 500 units came from Calgary and Vancouver.

After immediate needs were met, relief groups sought furniture and appliances so people could rebuild their lives. Food donations were being referred to the Edmonton Food Bank.

By mid-week, more than $250,000 had been raised for the victims, most collected by the Red Cross. That total was expected to go much higher as money arrived from other parts of the country.

At the hard-hit Evergreen Mobile Home Park, where 16 people died and 170 homes were destroyed, the Salvation Army set up a kitchen that fed hundreds of victims, police and other emergency officials each day.

It was well-stocked with pizza, hamburgers, fruit, sandwiches and drinks donated by Edmonton supermarkets and restaurants.

Prime Minister Brian Mulroney had kind words when he toured the park Monday, saying: "The Salvation Army, what would we do without you? God love you."

Victims were equally happy with all the aid they received.

"I'm amazed at how helpful people have been. Now we feel like we can get together and be in something that we can call home," said Jean Nachai, whose family lost its home and landscaping business.

"They have been just super," said Marie Newell, who lived in the park.

All three levels of government pledged assistance for victims. Premier Don Getty said the province would do "everything possible" regardless of the price tag.

"We are going to work to restore them to (the way they were) before this thing, and we'll worry about the dollars later."

The prime minister has added the federal government will do "whatever is necessary to be helpful."

According to an assistance formula, the province must pay the first $2.3 million in disaster aid, splitting any costs above and beyond that figure on a sliding scale with the federal government.

Volunteer and government agencies set up offices at M. E. LaZerte Composite High School to handle hundreds of people seeking everything from rent money to special clothing.

Counselling the families proved an important part of the work, helping them to let out their feelings in the days after the storm.

"It's the hard reality setting in," explained Bernie Krewski, regional director of mental health services.

"We're seeing a lot of sadness and tears, a little anger not directed at anything in particular — just that it happened."

At the other end of the city, about 1,000 workers in the devastated Sherwood Park industrial area were expected to apply for unemployment insurance.

Scores of businesses were put out of operation by the twister, and for many employees, applying for unemployment insurance was an unfamiliar step.

"This is my first time on UIC," said Peni Lal. "I've been working 10 years at Canada Packers . . . . I have a mortgage and a wife to support, and one small kid."

A third assistance centre was opened for Beaumont and Leduc area residents at 4301 50th St. in Leduc.

Mennonite members of of the Christian Disaster Relief agency, who helped clean up after the 1985 Barrie, Ont. tornado, visited Beaumont farms and Evergreen to help with the cleanup.

Several days after the disaster, the damage estimate was $150 million and rising, said Alan Wood, regional vice-president of the Insurance Bureau of Canada.

About 75 homes outside the Evergreen park were destroyed, with "thousands" of other homes damaged, he said.

He estimated up to 100 businesses were badly damaged by the storm,

Transportation was a mess

Buses and cars were trapped in traffic jams, a section of LRT tracks washed out and cab companies were swamped with calls as the storm struck during Friday's rush hour.

"Bus service was completely disrupted," said Llew Lawrence, an Edmonton Transit spokesman. "We had underpasses we couldn't get through and the traffic lights were off so that there were traffic jams."

LRT service north of Coliseum station was shut down just after 4 p.m. after a section of track washed out between that station and Belvedere. Lawrence said he hoped service would be restored by noon Saturday.

Cab companies advised customers to wait at least an hour. Yellow Cab received emergency calls from the Stelco plant, where people were hurt.

Flights at the municipal airport were delayed for about an hour, while a spokesman at the international said they experienced minimal disruption.

Friday's twister was biggest to hit Alberta

By GORDON KENT
and LINDA GOYETTE
Journal Staff Writers

Edmonton's massive tornado Friday killed more Albertans than all previous tornadoes combined, according to Journal files.

At least 26 Albertans died Friday. About 17 people have died in previous tornadoes across the province since 1900.

Four people died on the Morley reserve near Calgary in 1950.

Three Vermilion children were killed when a funnel cloud destroyed their log cabin in 1918, and another Vermilion woman died after being thrown 30 metres.

About 200 people have died on the Prairies from tornadoes in the last 87 years. Canada's worst previous storm hit Regina on June 30, 1912, killing 28 people, injuring hundreds, and demolishing much of the city.

While Friday's storm eclipsed this mark, it's far short of the world's worst tornado — 689 people killed March 18, 1925 in the south-central United States.

Keith Hage, a retired University of Alberta meteorology professor, said the province's concentrated population in 1987 made trouble more likely should a strong twister set down.

He said there is little protection from tornadoes, one of the most powerful forces on earth.

The narrow, erratic funnel clouds are difficult to predict more than a few hours in advance, he said.

Tornadoes occur when warm, humid unstable air meets a cold front. This slowly-rotating air may begin to converge and spin faster, in the same way a figure skater spins faster when he pulls in his arms. The storms, which can produce winds of up to 500 kmh, usually touch the ground for only a few seconds.

Here are some other recent fatal twisters to hit Canada:

- May 31, 1985: Three tornadoes in Barrie, Ont., kill 12 people, including four children, and destroy 300 to 400 homes in 20 communities. Hundreds of millions of dollars worth of property was destroyed.
- Aug. 7, 1979: Two people killed, 130 injured by a tornado described as "a train building up steam" that flattened Woodstock, Ont.
- June 19, 1978: One person killed, 14 injured in southeast Manitoba by two tornadoes.

List of dead

The office of the Chief Medical Examiner has confirmed the following deaths as a result of Friday's tornado:

Evergreen Mobile Home Park

Allan, Jim E., 51
Andruchow, Sharon, 15
Bain, Merle, 50
Barker, Marie, 50
Fankhanel, Lloyd, 55
Nolin, Alfred, 82
Nolin, Etta, 73
Palmer, Graham, 43
Putnam, Mary, 59
Reimer, Diane, 13
Reimer, Darcy, 11
Reimer, Dawn, 11
Reimer, Marvin, 40
Pancel, Kelly, 18
Robinson, Patricia, 30

Southeast Industrial

Carriero, Manuel, 38
Demetrius, George, 19
Dery, Edward, 40
Dhaliwal, Ajmar, 30
Gillespie, Richard, 29
Hartfeil, Frederick, 34
Lewis, Daniel, 18
Ly, To, 46
Mendosa, Edito, 40
Nault, Clement, 54
Trabenik, Gregory, 41



Homes stripped of roofs and outside walls resembled oversize doll houses, evidence of the vicious power of Friday's tornado

Two hours of terror



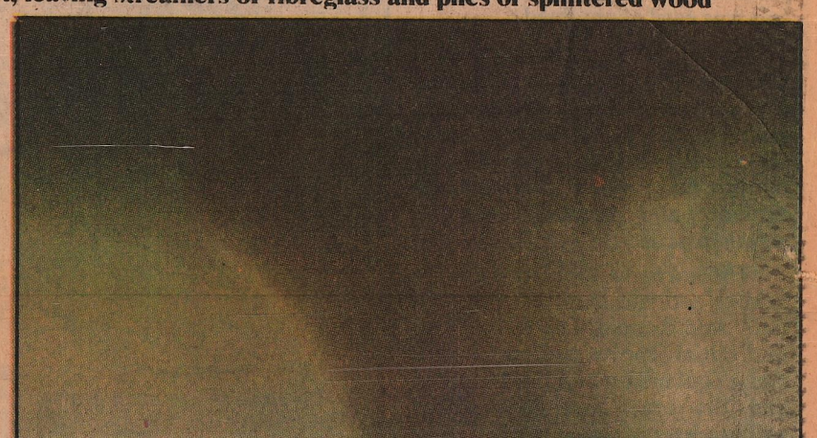
PICTURE: Ken Orr

Aerial view of the massive wreckage at the Evergreen Mobile Home Park Friday afternoon, where 15 people died; trailers were torn apart, leaving streamers of fibreglass and piles of splintered wood



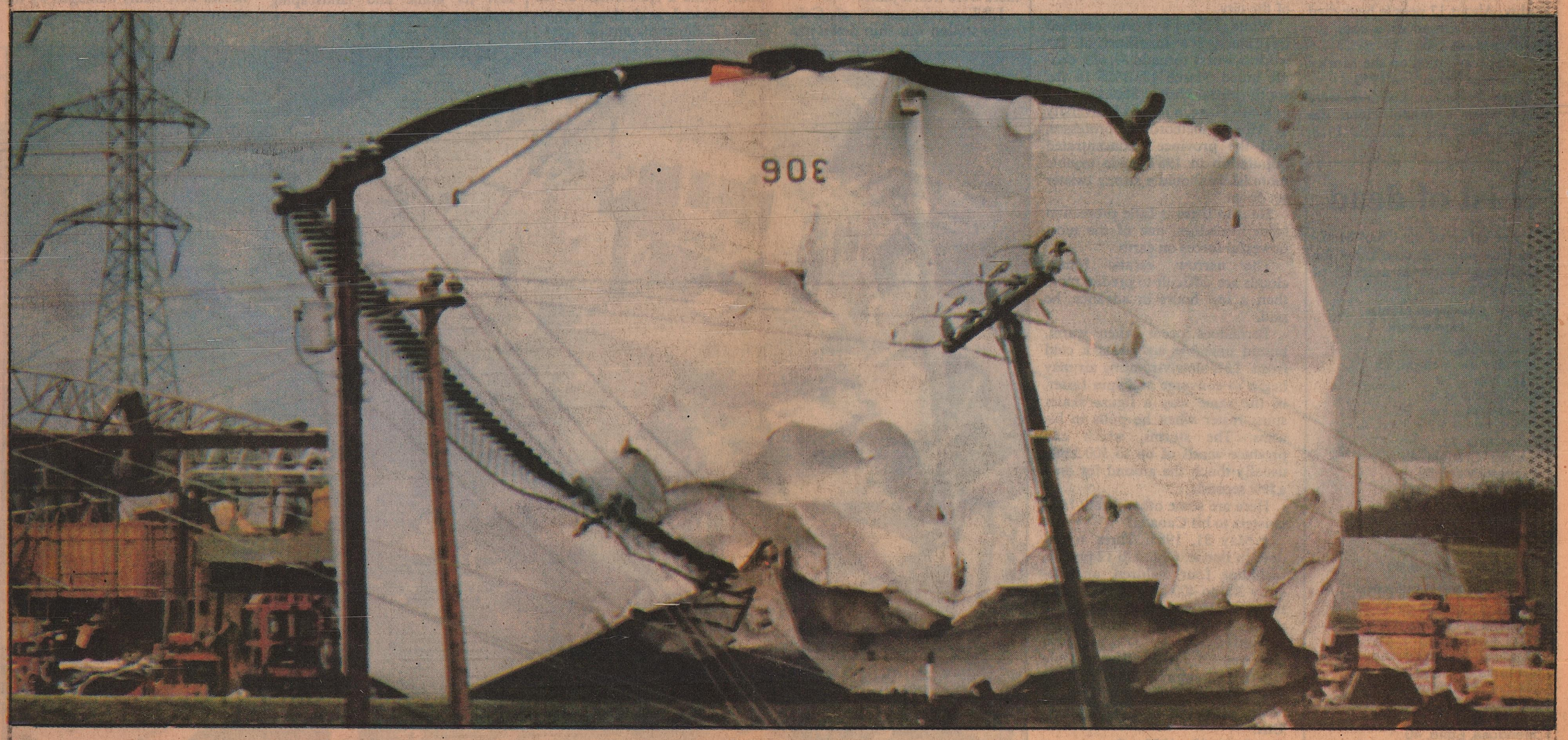
PICTURE: Doug Smith

Sombre Premier Don Getty looks over jumbled remnants of a trailer home at Evergreen Mobile Home Park on Friday
. . . both provincial and federal governments promised to provide speedy aid for tornado disaster victims



PICTURE: Kim Woolgar

Fearsome funnel cloud looms over Mill Woods residential area
. . . families emerged from cellars to find homes obliterated



PICTURES: Brian Gavriloff

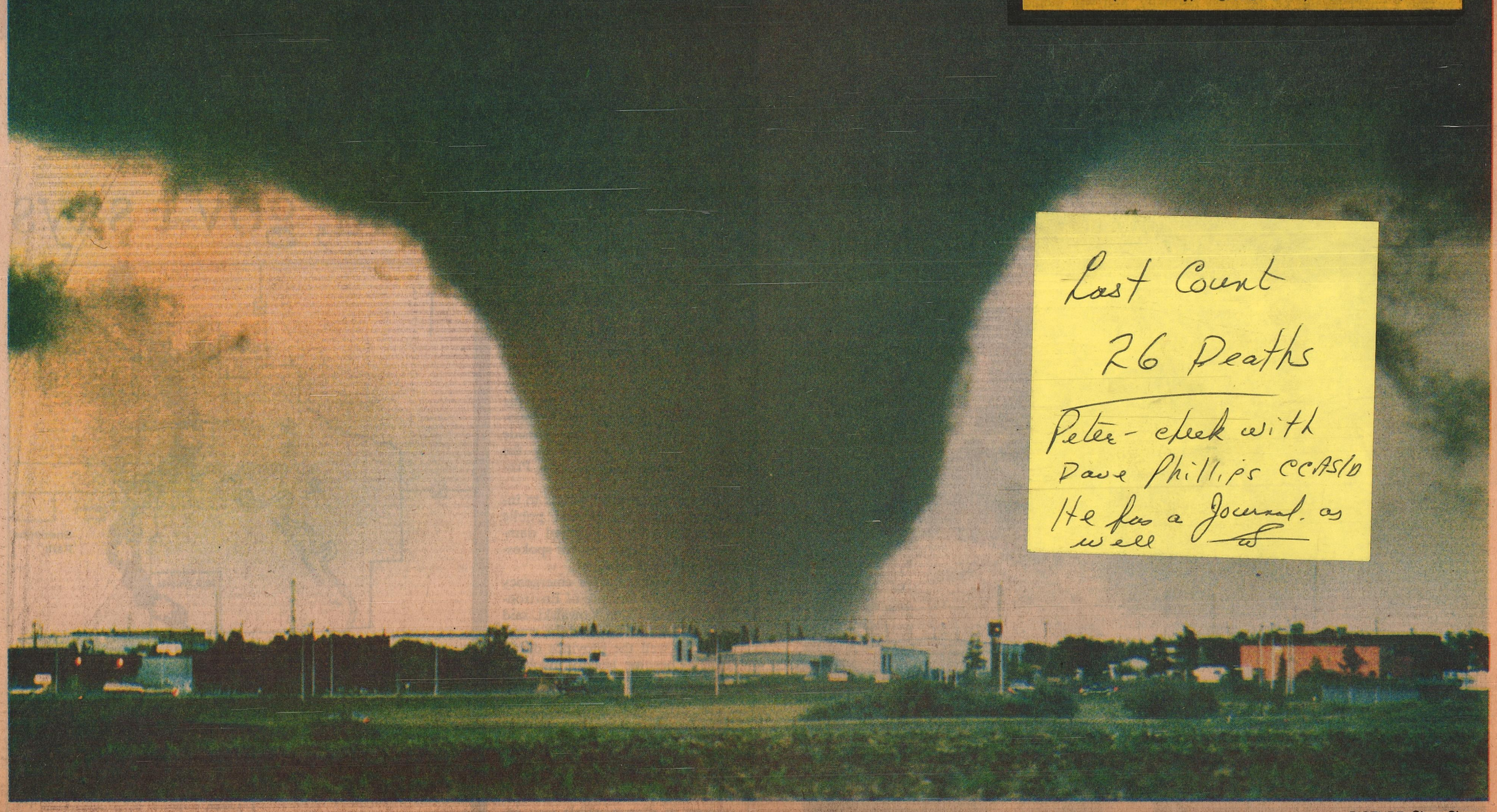
Huge oil storage tank rests upside-down, crumpled by the force of a tornado in the refinery row area; it was lifted about half a block and hurdled over top of power lines before coming to rest

Two hours of terror

The Edmonton Journal
50 Cents (Metro only) SATURDAY, AUGUST 1, 1987

Last Count
26 Deaths

Peter - check with Dave Phillips CCAS/D He has a Journal as well



Most of the people who died in Friday's tornado were residents of Evergreen trailer park in the city's northeast corner

PICTURE: Steve Simon

Tornado kills at least 36

Journal Staff Writers

The worst tornado in Canadian history ripped through the Edmonton area Friday killing at least 36 people, destroying homes, toppling trains and levelling industrial parks.

The two-block wide tornado touched down in Mill Woods at about 3:30 p.m. and continued its 30-km path of destruction through Refinery Row and into Clareview before leaving the city about an hour later.

The tornado claimed 25 lives in northeast Edmonton, four in the southeast end of the city and seven in Strathcona County. Hundreds of people were injured.

Ted Gartner, who witnessed the tornado as it swept through Strathcona Industrial Park, said: "It seemed like the end of the world was here . . . we all thought we were going to die."

Mayor Laurence Decore declared a state of emergency in the city at 6:15 p.m. after crews discovered the tornado had wiped out a southeast end industrial park, a Clarview trailer park and a Mill Woods subdivision.

City officials described the disaster as the worst they had ever seen and an ashen-faced Decore said he worried about the people who "perished in this dreadful tragedy."

Provincial emergency teams were on standby Friday and Labor Minister Ian Reid told reporters urban victims of the killer storm are likely eligible for help under a provincial program.

Damage to property was estimated in the tens of millions of dollars, by the mayor's office.

Houses and factories were flattened, power lines were snapped and lay snarled on city streets as the tornado cut its path across the city.

The Evergreen Mobile Home Park Court at 16700 10th St. received the majority of the storm's force, as 25 residents lost their lives and many more their homes.

Many Evergreen residents were devastated to find their homes and loved ones had disappeared in the wake of the storm. Albert William shouted: "I don't know where the hell they are . . ." as he searched for his two children in the chaos that had descended in the 700-home park.

In the industrial park, Frank Pasek freed himself from where he was pinned to the ground by a metal rod to run for help for his trapped friend.

When he returned, rescuers shouted for the missing man but could not find the co-worker under the debris.

"If he was still alive he would have heard me and answered," Pasek said.

City hospitals were swamped with storm victims as 209 Edmontonians flooded emergency rooms.

The entire southeast section of Edmonton was plunged into darkness, knocking out stoplights and causing major traffic at most major intersections.

Edmonton Power reported 234 homes and 67 city streets were flooded when 44 mm of rain fell between 3 p.m. and 6 p.m.

At least 12 cars from a CN Rail freight train were tossed off the tracks near 17th Street and Yellowhead Highway.

A boxcar was toppled off the tracks injuring two workers who had sought refuge inside the car which was stationed at 60th Avenue and 17th Street.

Regular emergency crews — bolstered by hundreds of volunteers — worked through the night to uncover survivors trapped in rubble.

Police foot patrols were investigating reports of looting in areas touched by the tornado.

Environment Canada spokesmen said it is unlikely another tornado will hit Saturday. They forecast clouds with scattered showers.

Bodies of victims are being brought from temporary morgues or hospitals to the medical examiner's office in Edmonton, police said.

Only five or six victims had been brought to the medical examiner's office by 10:30 p.m. Friday, and officials will contact family members for positive identification.

The father of 30-year-old Rick Gillespie, an employee of Lee Mason Tools, was one of the first to arrive at the medical examiner's office Friday night.

He left with a friend of Rick's after identifying the body, saying through tears only that his son "was in that tornado."

As the storm hit Refinery Row, a transport truck was flipped into a ditch. Police believe the driver is dead.

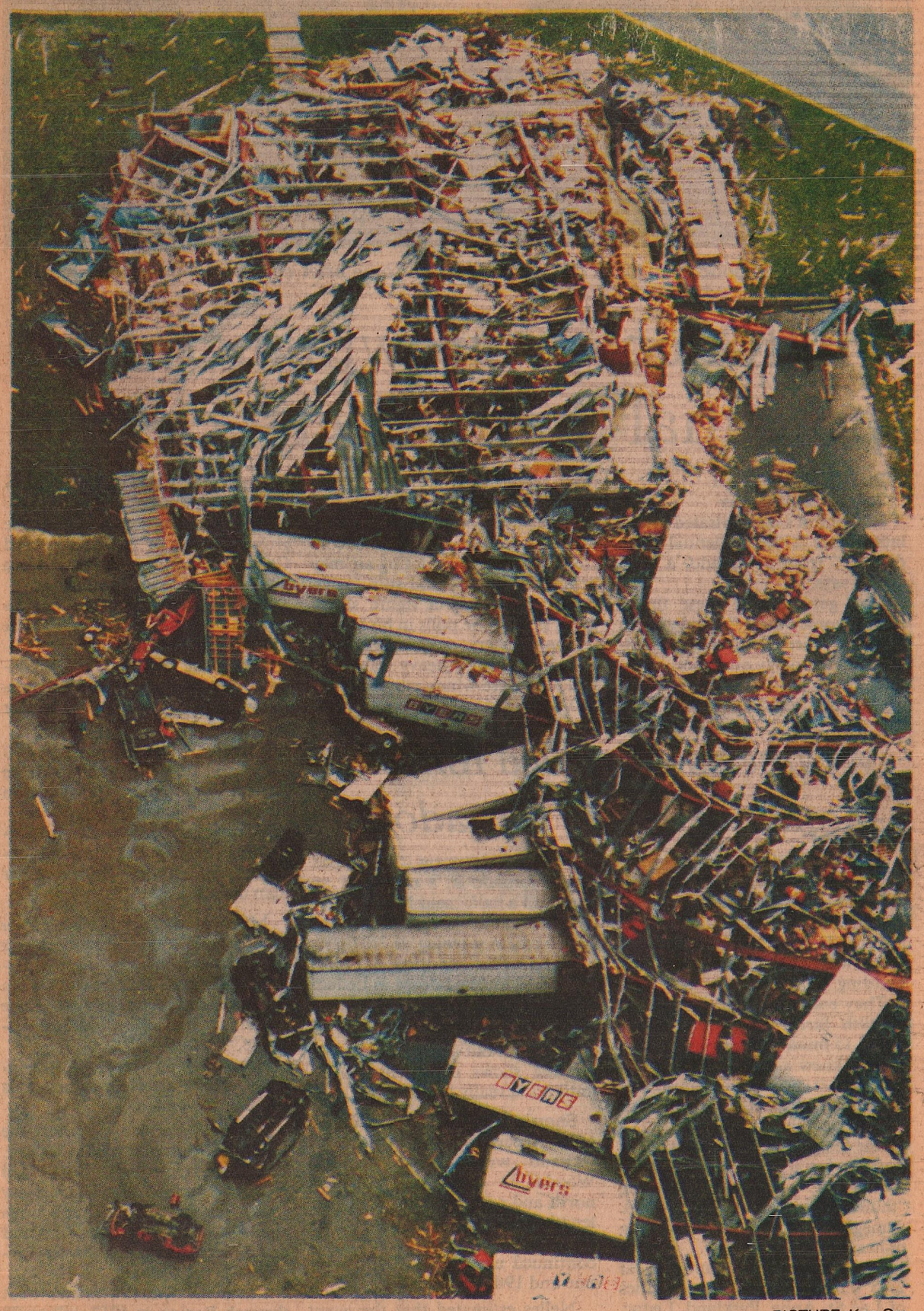
Special Edition

Friday's tornadoes left The Journal's Eastgate plant without power and unable to publish. This special edition was prepared here and flown down to the Calgary Herald to be printed. We apologize for not bringing you a full paper but with the state of emergency we felt it essential we provide Edmontonians with news of the disaster. An expanded paper will be published Sunday.

Story A2

Inside

- Map of path through city A2
- 'I can't believe we got out of there alive,' survivor says A4
- Machine shop blown apart A5
- Evergreen Trailer Park was demolished in seconds A3



PICTURE: Ken Orr

Byers Transport lies devastated, the warehouse crushed and trucks scattered

Published daily by the proprietor, Southam Inc., at The Journal Building, Edmonton, Alta., T5J 2S6. Second class mail registration number 0566.

Two hours of terror

Not even tornadoes can stop The Journal

This special storm edition of The Edmonton Journal is on the newsstands and at your door-step today despite power outages that prevented our presses from running.

With TransAlta Utilities officials predicting late Friday that power to our Eastgate production plant would not be restored until 10 a.m. today, the paper was forced to make arrangements to have it published elsewhere.

Despite the kind offers by other Alberta newspapers, management made the decision to ask our sister Southam publiciation, The Calgary Herald, to publish this 12-page special section.

The paper was made up in Edmonton, and the page negatives — along with a Journal press crew led by Dave Kealy — were flown to Calgary by chartered Lear Jet.

After printing, the bundled papers were then trucked back to Edmonton and dispatched to carriers and dealers.

Sunday's paper should be delivered normally, and will include regular Saturday features such as Travel and Careers as well as continuing coverage of the storm and other news.

Publisher William Newbigging said he was grateful to all staff and carriers for their "extraordinary efforts to get out this special edition."

An Editorial

Never has the need been more urgent

In the wake of Friday's storm which left scores of people dead and hundreds injured, Edmontonians' first thoughts must be of those families who have suffered immeasurable loss.

Hundreds have been left homeless in northeast Edmonton, Mill Woods and Sherwood Park as tornadoes unleashed their tremendous destructive force. Dozens of people are missing.

Mayor Laurence Decore has declared a state of emergency. Relief agencies are appealing for food; the provincial government has offered whatever help is needed.

That this tragedy occurred on the eve of the Civic Holiday weekend — a time at which Edmontonians have traditionally responded with unbridled enthusiasm to appeals by the Edmonton Food Bank — is darkly ironic. Never has the need for Edmontonians' generosity in providing food, shelter and clothing been more urgent. Never has the challenge been more daunting.

No Edmontonian has been left untouched by the profound tragedy which has occurred. For the victims of the storm — those who have lost family or friends or their homes — the pain must be immeasurable. For those Edmontonians who were fortunate enough to escape unscathed, the storm should serve to focus our thoughts and put them into perspective.

Too often, we become so wrapped up in our own concerns that we fail to notice the abiding suffering that goes on around us. We become so caught up in our despair that we tend to take for granted the enormous strength of the human spirit in the face of all adversity.

As the city recovers from this disaster, we will hear of the heroism of individual Edmontonians who risked their lives for the sake of others; of people who braved the storm in search and rescue operations; of doctors who worked tirelessly to save lives.

We will hear of the compassion of community groups and relief agencies who responded quickly and effectively to provide assistance; of individuals who opened their homes and their hearts to comfort victims of the storm.

Were it not for such selfless acts, the magnitude of this terrible tragedy might have been much greater.

The storm has passed, but the crisis is not over. In the days and weeks ahead, the resources of the community will be tested.

In the fine tradition this city has established, Edmontonians should respond to the full extent of their ability.



Bedraggled pooch caught in the storm receives some brief comfort from a volunteer

Cities probably eligible for storm aid, gov't says

By ROY WOOD
Journal Staff Writer

Victims of Friday's severe storms who live in cities are probably eligible for provincial help, government spokesmen say.

Labor Minister Ian Reid, temporarily responsible for emergency services, said late Friday that the province may also provide individual assistance to people outside the urban areas covered by the Urban Disaster Assistance Program.

The program gives grants to individuals, businesses and public organizations who suffered damage, explained government spokesman Andrew Hume.

Reid, responsible for emergency services in the absence of Environment Minister Ken Kowalski, said local authorities handled the emergency so well the province didn't have to become heavily involved. He said the province provided some assistance in locating extra ambulances and other emergency equipment.

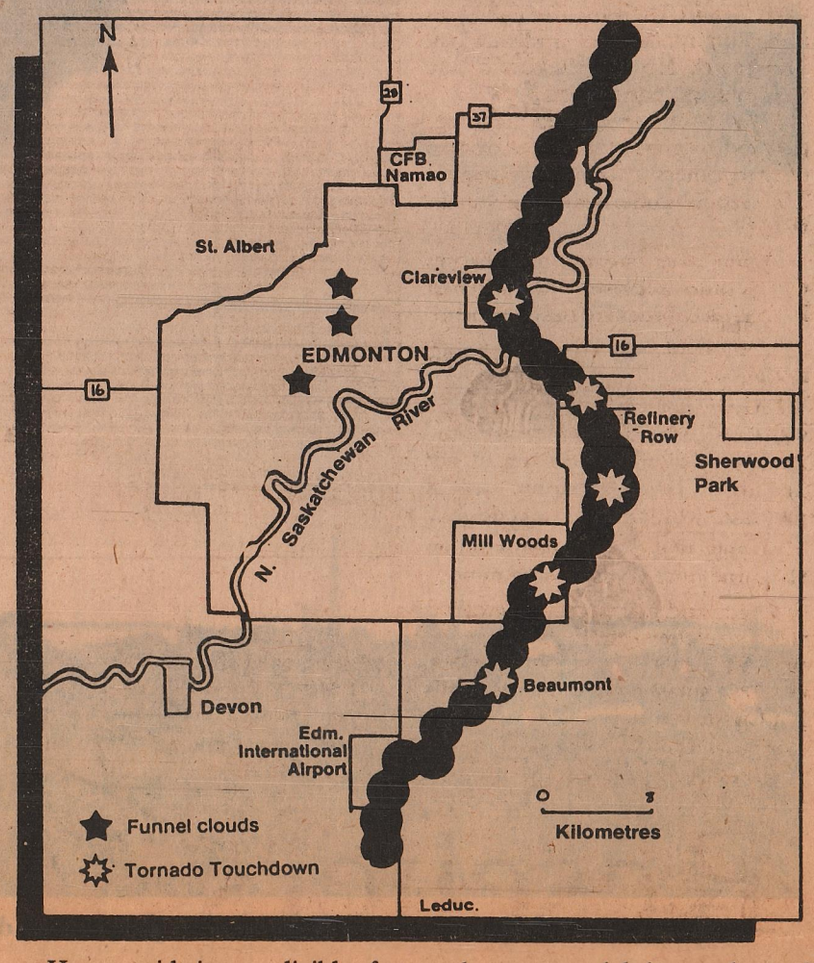
In an official government statement, Reid said: "The province will help the City of Edmonton, the County of Strathcona and their citizens in every possible way, including the provision of financial assistance."

He said the disaster plans of Edmonton, Sherwood Park and Strathcona County authorities were "extremely rapid and extremely effective . . . our role is to give every assistance that we can that they ask for."

Reid added the province is responsible for making sure areas outside the urban centres are protected during the emergency.

When the disaster is over, Hume said Alberta Public Safety Services will decide which areas are eligible for help, and then advertise times and places where victims may apply. He suggested those affected by the storms watch newspapers for notification.

The program usually pays 80 per cent of successful claims after a $1,000 deductible.



Hume said items eligible for coverage include:

- Actual damage to primary residences and business and industrial plants;
- Labor for the general cleanup of the damage;
- Rental of machinery or equipment made necessary for businesses to carry on after the storm;
- Water damage indirectly resulting from the storm; and
- Certain non-luxury household possessions.

Hume said each application will be assessed individually and the value of loss or damage will be determined by an independent appraiser.

Among the things that don't qualify for assistance: anything that was or could have been insured against the disaster; luxury and non-essential items; loss of rental or other income; damage to recreational buildings, vehicles or boats, and landscaping and trees.

Ed Patching, general manager of Alberta Hail and Crop Insurance, said he had no estimate of tornado and hail damage to crops.

He said about two-thirds of the agricultural acreage in the province is covered under the corporation's "all risks coverage" which includes tornadoes. However, that insurance protects whole crops, and minor tornado damage might not be covered.

Patching said most farm acreage is also covered by hail insurance.

The hail insurance program is paid for by premiums from farmers. The all-risk coverage costs are shared by farmers and the federal and provincial governments.

High-density growth increased potential for disaster—ex-prof

By GORDON KENT
Journal Staff Writer

Edmonton's concentrated population gave it the "potential for a disaster" from a tornado, a local expert says.

"We get more of these things than people think," said Keith Hage, a retired University of Alberta meteorology professor.

Over the past 20 years, an average of eight tornadoes a year have been reported in Alberta, mostly in rural areas, he said.

Tornadoes occur when warm, humid unstable air meets a cold front. This slowly-rotating air may begin to converge and spin faster, in the same way a figure skater spins faster if he pulls in his arms.

The twisters, accompanied by thunder storms, heavy rain and hail, can have winds moving up to 500 kmh. Most don't reach the ground, and if they do its usually only for a few seconds.

"I was concerned that with the growing area of Edmonton and Calgary, there was potential for a disaster coming up," says Hage.

There is little practical protection against the storms, one of the most powerful forces on Earth.

"To make a building tornado-proof, we're talking about something as well-built as a nuclear plant," he says.

The funnel clouds move erratically, and he doubts they will be predicted more than a few hours in advance in the near future.

However, the storm that hit Edmonton Friday was unusual because it had several funnels rather than one, he said.

Much of the destructive power of a tornado comes from the severe low pressure inside its rapidly-swirling winds. This creates such a pressure difference with air inside buildings that they "almost explode," he said.

People are advised to keep windows open to protect against this problem, he added.

Friday's storm is by far the worst in the province's history. The highest previous death toll was four people, killed at Grassy Lake in 1915. That toll was equalled in 1918 at Vermilion and again in 1950 on the Morley reserve west of Calgary.

Canada's worst twister cut through Regina in 1912, killing 28 people and injuring hundreds more.

Weathermen headed for cellar moments before tornado hit

By FRANCES MUTSUKA
Journal Staff Writer

Weather officers hurried to the basement of the Alberta Weather Centre Friday when a tornado came within 100 metres of their building.

They emerged from their refuge at 49th Street and 98th Avenue about 15 minutes later.

"We knew a tornado was possible, but it wasn't something we were really expecting," said Ken Nelles, weather officer.

The centre issued a severe weather warning for the Calgary-Red Deer area at 11:15 a.m. Friday, predicting "thunderstorms with large hail, damaging winds, intense lightning or heavy downpours."

The warning was updated at 2:45 p.m. to include the counties of Lac St. Anne, Parkland, Leduc, Wetaskiwin, Ponoka and the City of Edmonton.

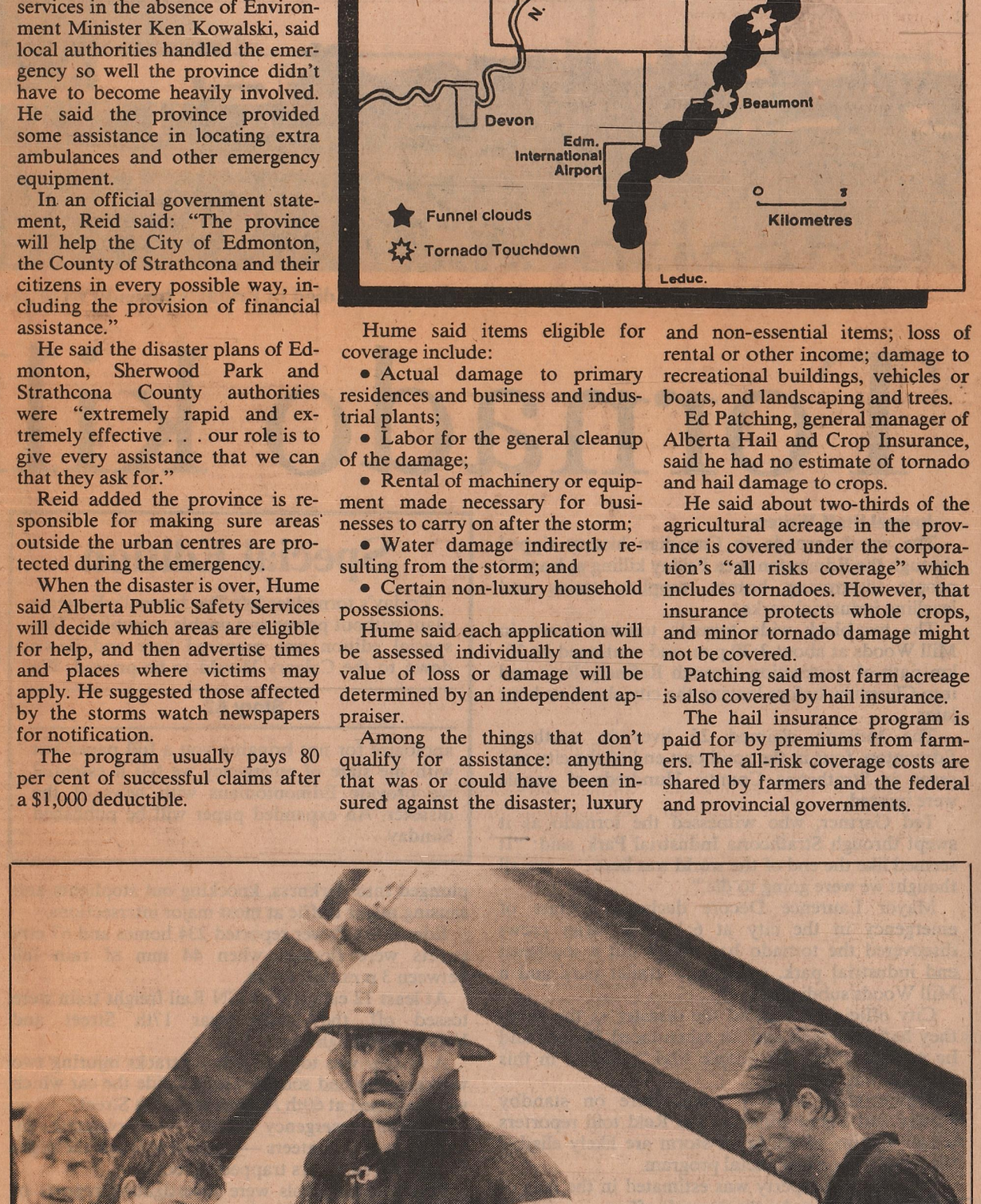
The thunderstorm "developed into a tornado in a matter of an hour and a half," said Nelles.

The weather office issued the first tornado warning at 3:07 p.m. when a caller reported a funnel cloud had touched down in Leduc.

"You almost have to have a confirmed report of a tornado before you can put out a warning because nothing shows up on the screen until it's actually there."

Shortly after the Leduc call, the office received a report that the tornado was spotted in Mill Woods. It continued to travel north and east, covering the entire length of the city in that direction, as it moved across the river and continued up into the 144th Avenue and 19th Street area.

Nelles estimated that the worst of the destruction had ended in Edmonton by 5 p.m.



Rescuers help injured man in the rubble of a collapsed building



Two hours of terror

- Flood warning in effect for northern Alberta B1
- Damage could top $100 million, insurers say B2
- Death came quickly, pathologist says B3
- Predicting tornado impossible—forecaster B4
- 400 jobs in jeopardy at Stelco B6
- The story in pictures B8



The Edmonton Journal

50 Cents (Metro only) SUNDAY, AUGUST 2, 1987

City opens its heart



Clareview street a hive of activity as residents pick up pieces
. . . path of Friday afternoon's tornado was just beyond the backyards

PICTURE: Karen Sornberger

Families torn apart by twister

By KIM McLEOD
and Journal Staff Writers

Residents spared the fury of Edmonton's killer tornado opened their hearts Saturday to others who spent a grim day searching for signs of loved ones in heaps of rubble.

Spokesmen for the insurance industry emergency committee handling claims from the twister estimated the damage total could exceed $100 million.

Many tornado survivors spent the day picking through mountains of debris in a southeast industrial park, and in a northeast trailer-park-turned-graveyard by the brute force of the twister — one of the worst in Canadian history.

The area death toll stood at 36 late Friday night but dropped to 20 in Edmonton and five in the County of Strathcona — a revision not explained by city officials. Injuries caused by the storm soared into the hundreds.

Endless generosity by residents coupled with the discovery of two infants who clung to life under piles of wreckage were the only bright spots in a dreary day.

Baby plucked from rubble

In one instance, a policeman, picking his way through the twisted wreckage of a trailer, heard a cry beneath him and was able to pluck an unidentified infant from the rubble.

Edmontonians donated 350 units of blood and jammed the city's emergency relief centre with enough clothing, food and supplies to fill more than five warehouses. Officials were forced to ask Edmontonians to temporarily halt donations.

Stories of families literally torn asunder by the tornado prompted calls of support from as far away as Nashville, Boston and Montreal.

Prime Minister Brian Mulroney pledged federal support for the disaster victims. Premier Don Getty, who toured the scene of the destruction, told survivors "not to worry about the dollars, we'll provide them."

Getty, Labor Minister Ian Reid and Technology Minister Les Young, stood speechless in the mobile park as they watched survivors carrying what remained of their lives in green garbage bags.

Police also charged two mobile park residents with theft after reports of looting at the site.

Scene called 'bombing zone'

Deputy Prime Minister Don Mazankowski, who flew over the path of destruction Saturday, described the scene as a "bombing zone."

Mayor Laurence Decore praised the more than 1,000 city employees and hundreds of volunteers who helped with search and rescue, but expressed concern that the weather office should have issued an earlier storm warning.

Decore's call for a review of the Alberta Weather Office's warning procedures was met with a quick defence by the office's meteorologist, Dave Burnett.

"The mayor like all of us, is greatly saddened and frustrated by the inability to do something . . . so he's darting about looking for some cause for such a horrible thing," Burnett said.

Survivors of the carnage found refuge in the Londonderry Inn at 131st Avenue and Fort Road. Hundreds flooded into the hotel seeking food, medical aid and word of the location of loved ones.

Hotel manager Jason Braun said the reunions of loved ones "just ate your stomach out."

Others, like Brian Bowyer, were less fortunate. Bowyer, whose mobile home was destroyed, is awaiting word on the fate of his sister Kelly Pancel, 18.

Bowyer last remembers seeing Kelly pinned between two trailers shortly before he was taken to hospital: "I tried every way possible I could to get a pulse but I could not get anything."

Final toll 25, police believe

By RICHARD HELM
Journal Staff Writer

City police believe they have found the last casualty of the tornado that ripped a deadly swath through Edmonton Friday.

Twenty-five people lost their lives to the storm.

Insp. Frank Topp declared it extremely doubtful early Saturday night that any dead or injured remain in the tornado ruins.

Topp said 11 bodies were found in Evergreen Mobile Home Park in the city's northeast, nine in the the southeast industrial area and five in the county of Strathcona.

The search for survivors has ended on the South Side and police believe they will find no more bodies in Evergreen, he said.

"All residents of the destroyed and damaged trailers have been accounted for," Topp said.

"There remains a remote possibility that a visitor may remain hidden in there somewhere but it's highly unlikely."

Searchers have gone through the Evergreen mobile home park "with a fine-tooth comb and they're satisfied their searches will reveal no more bodies," he said.

The medical examiner's office said the victims died from blunt force injuries — they were either struck by chunks of flying debris or were hurled to their deaths against walls or other solid objects.

Here is a list of confirmed dead from the Evergreen trailer park:

Sharon Andruchow, 15
Merle Bain, 50
Marie Barker, 50
Lloyd Fankhanel, 55
Etta Nolin, 73
Fred Nolin, 83
Mary Putnam, 59

Confirmed dead from the southeast industrial area were:

George Demetrios, 19
Ajmer Dhaliwal, 30
Richard Gillespie, 29
Daniel Lewis, 18
Edito Mendosa, 40
Clement Nault, 54
Graham Palmer, 43
Gregory Trabenik, 41.

Topp said it is likely that many Evergreen residents whose units were undamaged will be allowed back in their homes sometime this evening.

The emergency response operation had wound down dramatically by the evening following a full day of painstaking searches and cross-referencing missing persons reports.

The police command post in Mill Woods is being withdrawn but regular patrols will continue among the damaged homes there.

Returning to normal

The Journal resumed normal operations late Saturday afternoon after power failures caused by Friday's tornado crippled our Eastgate production plant.

Editor Linda Hughes' column B2

The power interruption had forced us to drastically scale down Saturday's edition and to limit it to coverage of the disaster. All the regular Saturday features, such as Travel, Trends and Religion appear in today's edition alongside Sunday Eyeopener and Brunch.

0 11 558296

Published daily by the proprietor, Southam Inc., at The Journal Building., Edmonton Alta., T5J 2S6. Second class mail registration number 0566.



PICTURE: Tony Bock, Toronto Star

Manny Fitzgerald, 16, and Lisa Biddiscomb, 22, comfort their mother Marlene Fitzgerald, 46
. . . grandparents Etta Nolin, 73, and Fred Nolin, 83, died in Evergreen mobile home park

Weather

Showers with gradual clearing in the evening. High 16. Winds northwest 40-60 kmh. Chance of rain 60 per cent. Monday: sunny, 21. Details H10

LOTTOLUCK

Lotto 6/49 draw — C12

Eyeopener
Startling cases of how the Soviets recruit Canadian spies. G1

Edmonton Food Bank is collecting non-perishable provisions today and Monday at Heritage Days in Hawrelak Park, at firehalls and designated Safeway stores.

No paper Monday

Ann Landers	D12	Patterns	H7
Bingos	F8	Phyllis Mitchell	C5
Births	H5	Religion	C10
Bob Greene	C5	Sports	E1
Brunch	C1	Television	F7
Business	D1	The Provincial	C12
Canada	A2	Tornado	B1
Careers	D4	Travel	C6
Comics	H3	Weather	H10
Crossword	H8-9	World	A9
Deaths	H4	Viewpoint	B4
Dick MacLean	C1		
Dr. Donohue	D12		
Entertainment	F1	**CLASSIFIED ADS**	
Horoscope	H7	Index	H5
Junior Journal	D11	Order form	H10
Lifestyle	D12	Employment	H6
Lotto 6/49	C12	Mini Market	H8
Movie Directory	F3	Real Estate	G7-12
Olive Elliott	B5	Vehicles	H12-15
Opinion	B4		

Search widens for refugee boat

OTTAWA (CP) — The search was intensified Saturday for a ship rumored on its way to the East Coast with a cargo of refugees.

Two destroyers joined aircraft, Coast Guard vessels and two other destroyers already in the air and sea search.

But there was no sign of the MV Walfis, the vessel Dutch and Canadian authorities believe may be headed for Canada, and Immigration Department spokesman Fay Taylor admitted, "We're kind of looking for a needle in a haystack."

Taylor said the Athabaska and Skeena joined the Fraser and Assiniboine destroyers Saturday to zigzag the Atlantic Ocean. There are seven coastguard vessels crisscrossing the 12-nautical-mile limit in the Atlantic, she said.

From the air, a number of planes are on the lookout as far away as the 200-mile international limit. Trackers out of Summerside, P.E.I., are on eight missions a day. Aurora aircraft based in Greenwood, N.S., are going to and from the international border four times a day, said Robert Greenslade, another department spokesman.

The call for the Defence Department came Friday night when Immigration Minister Benoit Bouchard announced a search off Canada's East Coast had been ordered for a boatload of refugees.

Three weeks ago, 174 East Indians landed in Nova Scotia. All have claimed refugee status. Most are Sikhs and say they are persecuted at home.

The incident prompted Prime Minister Brian Mulroney to call for the resumption of the House of Commons to pass legislation that would hasten the period of refugee determination and provide stiff penalties for those who abuse the system. Commons Speaker John Fraser agreed Friday to call MPs back and it is expected the House will resume sitting in mid-August.

It remained unclear Saturday, however, if the ship that left Amsterdam on July 23 is actually transporting people looking for a new home, the Immigration Department said.

Larry Smith, Canada's ambassador to the Netherlands, said the information on which Bouchard based his decision to launch the search came after a joint investigation by Canadian embassy personnel and Dutch police.

Clues indicated the suspected vessel is the MV Walfis, built in 1914 as a fishing vessel but since converted to contain cabins.

Smith said in a telephone interview there was no direct evidence to link the vessel with a refugee smuggling operation, but he added there were "other factors" he couldn't reveal.

If the ship is found and is carrying refugees, it will be intercepted and boarded before being told to return home, Taylor said. But she echoed Bouchard's statement Friday that at no point human lives will be risked.

Meanwhile, police and Canadian officials in Belgium cannot confirm a story in the Ottawa Citizen that at least 130 would-be refugees have paid an unidentified sea captain almost $2,000 each to be smuggled on a ship scheduled to leave there Wednesday.

Belgian authorities were alerted to the possible sailing following an anonymous tip to the Canada's embassy in Brussels. The tip is being taken seriously, however.

Federal aid office will locate here

By MATTHEW McCLURE
Journal Staff Writer

Edmonton has been chosen as headquarters for Ottawa's proposed $1 billion economic aid package for Western Canada, say government sources who have seen a draft of the closely-guarded plan.

The package — expected to be officially announced here Tuesday by Prime Minister Brian Mulroney — could create 300 jobs in the city, officials with the federal Department of Regional Industrial Expansion (DRIE) told The Journal.

Although elected officials are keeping quiet on details of the long-awaited plan, Deputy Prime Minister Don Mazankowski said Friday the initiative will allow for significant local decision making similar to the recently announced package for Atlantic Canada.

After a 90-minute meeting with Premier Don Getty, Mazankowski told reporters centralized economic planning has not worked in the past and in future the regions must be in on the decision making process.

"We believe that to establish a uniform policy across the country to be administered out of Ottawa is not the way to go."

"We also believe it's important to ensure there is a process for the decision making to take place in that region."

The Atlantic Canada Opportunities Agency, announced June 6, includes a budget of $1.05 billion over the next five years to stimulate the Maritime provinces' economies.

With a staff of 300, the Moncton-based agency is aimed at replacing a bevy of federal boards, agencies and incentive programs designed to lift the region out of its traditional have-not status.

The new agency will be headed by Halifax-native Donald Macphail, and will take advice from a board drawn from both public and private sectors in the region.

The department currently has a staff of over 40 in Edmonton to administer "several millions of dollars" of aid and investment incentives, said Frank Chapman, DRIE's Alberta regional director.

A spokesman with the Prime Minister's office said Friday the government has a policy of neither confirming nor denying rumours about the details of the package.

Survivor thought she'd die

WINNIPEG (CP) — Anita Hudson said only one thought was going through her mind as the twin-engine plane she was in dove toward an office building near Winnipeg International Airport.

"I thought I was going to die, that's all," said Hudson, 18, sitting in a wheelchair at the emergency room of the Health Sciences Centre.

Hudson and her cousin Margaret Hudson, 19, miraculously walked away from the crash Friday, after the Beechcraft Queenair lost power in its left engine shortly after takeoff and slammed into the roof of the one-storey converted warehouse.

"I grabbed on to Margaret and we were screaming and hugging," Hudson said. "It took not even a minute to hit the ground."

The crash ripped a 10-metre hole in the roof of the building, which houses offices of the provincial Department of Natural Resources, Wrigley Canada Inc. and Canadian Liquid Air Ltd.

As investigation and clean-up operations began, officials expressed amazement that more people weren't hurt. About 150 people normally work in the building but most were on vacation. Only six of 20 employees at the Department of Natural Resources were working Friday when the plane crashed.

The condition of pilot David Ecklin, 25, of Winnipeg, improved Saturday to serious from critical. Passenger Glenn Murphy, 51, of the Berens River Indian Reserve improved from serious to fair condition, as had office worker Robert Betcher who was pinned at his desk by wreckage.

Passenger Beatrice Fontaine, 25, of the Poplar River reserve improved from critical to serious.

The cousins were released after being treated for scratches and shock.

Margaret Hudson, said, "We started going down fast. Me and my cousin were holding one another and screaming. Then we hit the ground."

Fire officials speculated cool, humid conditions prevented the 450 kg of fuel from vaporizing and becoming highly volatile.

OPEN SUNDAY, AUG. 2 AND MONDAY, AUG. 3

5 DAY CARPET BLITZ!

THURS., FRI., SAT., SUN., MONDAY

HARDING, BURLINGTON, CORONET, PEETERS

- 45 oz. Faceweight
- Heavy Tracery
- DuPont Antron Nylon
- DuPont STAINMASTER

Value to 29.95 sq. yd.

$18.99 sq. yd.

- 40 oz. Faceweight Nylon Plush
- Continuous Filament Nylon
- Scotchgard

Beautiful hand and finish
Value to 24.95 sq. yd.

$15.99 sq. yd.

50 oz. Faceweight Plush
Saxony 15 Decorator Shades
Scotchgard
Value to 35.95 sq. yd.

$22.99 sq. yd.

Assorted Rolls Nylon
Plushes and Sculptures,
1st Quality Material Discontinued Lines.
Value to 29.95 sq. yd.

$9.99 - $16.99 sq. yd.

MURDOCK'S CARPET CENTRE
10124-149 Street
(N.W. Corner Stony Plain & 149 St.)
Mon.-Fri. 9-9
Sat. 9-5
Sun. 11-5
486-3988

The Furniture Close-Out Warehouse buys factory close-outs and passes the savings on to you! All furniture carries the factory warranty.

Personal shopping only. Delivery available. Shop early for best selection!



3 DAYS ONLY

JULY 31st, AUGUST 1st & 2nd
10:00 A.M. TO 10:00 P.M.

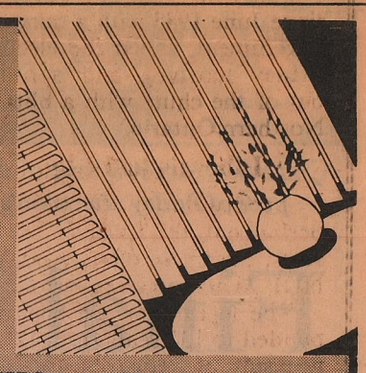
FRIDAY, JULY 31 ..... 40% OFF
SATURDAY, AUGUST 1 ..... A further 10% OFF
SUNDAY, AUGUST 2 ..... A further 10% OFF

FURNITURE CLOSE-OUT WAREHOUSE
10241 - 109 STREET
426-5144
VISA MasterCard

BUY DIRECT FROM THE MANUFACTURER

SAVE UP TO 60%

ON REGULAR PRICED BLINDS
SOLD AT MAJOR DEPARTMENT STORES



- FREE INSTALLATION
- FREE VALANCE
- FREE SHOP-AT-HOME DECORATOR SERVICE at your convenience without obligation

- VERTICAL and HORIZONTAL BLINDS
- PLEATED and BALLOONED SHADES
- MICRO BLINDS • WOVEN WOODS
- DRAPERIES • BEDSPREADS
- ROLLER SHADES

SUREWAY BLINDS®
"Our Way is the Sure Way"
7219-77th Avenue
468-1046
Monday-Saturday 9-5
Credit Terms Available
MasterCard VISA
Edmonton • Calgary • Vancouver • Winnipeg • Toronto

Hey Edmonton!

Farmers Shake

Shake it up with the great taste of Farmers milkshakes
Smooth and Delicious
Thick & Nutritious
Buy some today....

25¢ Off Twenty-Five

Farmers Milkshakes 3 × 200 ml

25¢ Off Twenty-Five

Retailer: We will redeem this coupon for the face value indicated plus normal handling charges providing you receive this coupon towards the purchase of the product identified thereon. Any other application constitutes fraud. For redemption, mail to: Farmers Co-operative Dairy Limited, P.O. Box 3000, Saint John, New Brunswick E2L 4L3.

One coupon per purchase

Expiry Date: August 31, 1987

533312bH

Two hours of terror

Few treasures remain at Evergreen mobile park

By BRYANT AVERY
Special to The Journal

Darlene Dick was one of many distraught residents of Evergreen Mobile Home Park who recognized treasures in the rubble after Friday's tornado and feared the worst.

For her, it was a tiny stuffed animal lying in the mud beside a pile of furniture and wood fragments — all that was left of her home along 167 Avenue in northeast Edmonton.

"I was just talking to my daughter from work, about 2 p.m.," she said. "She was cooking a roast or something."

Dick's three children, aged 15, 12 and 11, were still unaccounted for two hours after the twister wiped out countless mobile homes in the 700-home park.

Sobbing, she repeated "Oh, my God. Oh, my God."

Thirty-six year old Albert William was also searching for two children.

When the storm hit, he had been at work at Canada Place but he knew his wife was in the hospital with a broken leg.

His six- and 10-year-old children, however, were still missing.

"I don't know where the hell they are," he said, and in the chaos of the hour disaster services personnel on the scene were unable to tell him where they might be or if they were alive.

"Holy ----, my trailer's gone," he said upon first seeing the devastation.

Like Darlene Dick, William identified the lot he knew to be his and recognized items that belonged to neighbors, but most of his own possessions — including he trailer — had vanished.

"I haven't even finished paying it off," he said quietly. "I finally get a job and get all this stuff and then all of a sudden it's gone."

The largest pile of twisted homes rose just east of William's spot, and there a dozen firemen and volunteers heaved aside hunks of sheet metal and household goods hoping to locate as many as five people reported missing.

There were at least three vehicles in the mound, ominously suggesting the occupants had been home at the time the twister dipped, skipping the greenhouses of Kuhlmann's Market Gardens and some of the mobile homes but flattening others next door.

Nearby, James Loucks and Gerry Churko frantically called for a woman they called "Mom," Mrs. Galding. Her trailer was upside down, the wheels and floor resting where the roof should have been.

Loucks said he could smell her perfume in the area where the sitting room was, and as the mocking sun began to come out at dusk, he was joined by rescue crews in his search.

Like the others, he didn't know if she was there, somewhere safe, or one of the casualties.

Rail cars knocked off tracks

By LASHA MORNINGSTAR
Journal Staff Writer

About a dozen railway cars, some of which had previously carried dangerous goods, were blown off the tracks by Friday's killer storm.

Canadian National Railway spokesman Alex Rennie said the incident was one of three CN Rail operations which were hit by the storm. The railway counted two workers injured in the mishaps.

Rennie said the derailed freight was stopped on the east Edmonton line that runs alongside 17th Street near the Yellowhead Highway when the twister hit.

"It was sitting in the siding southbound, waiting for clearance to proceed when the tornado blew 12 or 13 cars off the track," said Rennie. There were no injuries.

Five of the cars blown off were empty, but had previously contained dangerous goods. One had carried propane, and had a minor leak in the dome, but Rennie said CN's dangerous commodity experts said the leak was not serious and was easily contained.

The second incident involved a yard engine operating in the industrial park in the 60th Avenue and 17th Street area. Two crew members were standing beside the stationary train when they saw the tornado and climbed into an empty boxcar.

"The tornado toppled over the boxcar and the men were thrown out," said Rennie. The CN official said initial reports said one worker had a concussion and back injuries and the other was hospitalized with undetermined injuries.

The third CN-related incident saw a company plant destroyed.

"Our manufacturing plant — or I should say the manufacturing plant we had — was totally destroyed," said Rennie. None of plant's 35 people employees were injured.



PICTURE: Karen Sornberger

One injured CN Rail worker helped from boxcar

Edmontonians opening hearts, homes to victims

By AL TURNER,
FRANCES MISUTKA
and GREG OWENS
Journal Staff Writers

Edmontonians opened hearts and homes to victims of Friday's tornado.

Gary Cook, regional manager of the Canadian Red Cross, said about 200 citizens and "eight or nine hotels" phoned to offer temporary accommodation to the hundreds left homeless.

He said about 70 families were being housed in the Bonnie Doon High School and about 20 others at the Londonderry Hotel.

"We've mobilized all our volunteers and Edmonton staff," Cook said. "It's all under control, we have all we need."

Cook said the phone lines at the Red Cross "have not let up" with people wanting to help.

Cook said there is no immediate need for blood donors despite the the number of injured people admitted to local hospitals. However, he said an emergeny alert will be issued if the situation changes.

However, he urged displaced people who are staying with friends or relatives to check in with the Red Cross at 423-2680.

He said the regional centres in Edmonton and Calgary are getting calls from all over the country from people concerned about the welfare of friends and relatives.

"We're getting so many calls I can't even get an outside line," Cook said. "We've got 10 lines and AGT is putting in another 10 lines."

Most of the callers would likely not know the status of family or friends until late Friday or early today because information about survivors was trickling in very slowly, he said.

Rescue workers and the homeless are being provided with food, coffee and donuts donated by Canada Safeway. Cook said supplies of baby formula and disposable diapers are also being made available.

Richard Thibeau and his family had only one question.

"What are we going to do where are we going to go. We don't have any relatives in this city," Thibeau said.

His Evergreen Trailer Park home was flooded out during the tornado and barely escaped being ravaged.

The Thibeau family was one of many that flooded into the Londonderry Inn for shelter. All three Renford Inn hotels in the city were offering free shelter to victims of the storm.

The hotel set up temporary beds in the banquet room for the homeless survivors of the disaster.

"Two other houses landed on ours, a washer and dryer attacked me," said Brian Bowyer.

Bowyer held his sister-in-laws four week old baby Megan Renee in his arm who also survived the destruction of their trailer home.

All his family members survived but several were seriously injured.

Jason Braun, manager of the hotel said many of the people entering were missing family members.

"They're coming looking for friends or relatives they don't know where they are or what happened to them."

Many of the people in the banquet room looked shocked and others cried.

"My sister-in-law's house beside us was destroyed. It took an hour and half for us to find one of her sons in the rubble," said Lynda Solberg.

All three of her sister-in-law's children were located after a frantic search but the babysitter was not.

"We couldn't find Sharon (the babysitter) I don't think she made it."

Nader Ghermezian was one of the hotel owners offering help. He offered free accommodation for about 200 victims in a local apartment hotel.

The Ghermezian-owned building, Tower on the Park, is at 9715 110th Street.

Fifty apartments with kitchen facilities are available to victims until they can find alternate accommodations.

Reservations can be made by calling 420-1212.

Show dedicated to storm victims

A concert at the Jubilee Auditorium at 8 p.m. Saturday will be dedicated to the victims of Friday's tornado.

Funds will also be solicited for a relief fund, said Gordon Wright, MLA for Edmonton Strathcona, and vice president of the Richard Eaton Singers, one of the performing groups.

The concert will also feature the choir, Hagacantare, from The Hague, Netherlands. Selections will include Faure's Requiem for the dead, and Bruckner's Te Deum.

Transportation was a mess

Buses and cars were trapped in traffic jams, a section of LRT tracks washed out and cab companies were swamped with calls as the storm struck during Friday's rush hour.

"Bus service was completely disrupted," said Llew Lawrence, an Edmonton Transit spokesman. "We had underpasses we couldn't get through and the traffic lights were off so that there were traffic jams."

LRT service north of Coliseum station was shut down just after 4 p.m. after a section of track washed out between that station and Belvedere. Lawrence said he hoped service would be restored by noon Saturday.

Cab companies advised customers to wait at least an hour. Yellow Cab received emergency calls from the Stelco plant, where people were hurt.

Flights at the municipal airport were delayed for about an hour, while a spokesman at the international said they experienced minimal disruption.

Friday's twister was biggest to hit Alberta

By GORDON KENT
and LINDA GOYETTE
Journal Staff Writers

Edmonton's massive tornado Friday killed more Albertans than all previous tornadoes combined, according to Journal files.

At least 35 Albertans died Friday. About 17 people have died in previous tornadoes across the province since 1900.

Four people died on the Morley reserve near Calgary in 1950.

Three Vermilion children were killed when a funnel cloud destroyed their log cabin in 1918, and another Vermilion woman died after being thrown 30 metres.

About 200 people have died on the Prairies from tornadoes in the last 87 years. Canada's worst previous storm hit Regina on June 30, 1912, killing 28 people, injuring hundreds, and demolishing much of the city.

While Friday's storm eclipsed this mark, it's far short of the world's worst tornado — 689 people killed March 18, 1925 in the south-central United States.

Keith Hage, a retired University of Alberta meteorology professor, said the province's concentrated population in 1987 made trouble more likely should a strong twister set down.

He said there is little protection from tornadoes, one of the most powerful forces on earth.

The narrow, erratic funnel clouds are difficult to predict more than a few hours in advance, he said.

Tornadoes occur when warm, humid unstable air meets a cold front. This slowly-rotating air may begin to converge and spin faster, in the same way a figure skater spins faster when he pulls in his arms. The storms, which can produce winds of up to 500 kmh, usually touch the ground for only a few seconds.

Here are some other recent fatal twisters to hit Canada:

- May 31, 1985: Three tornadoes in Barrie, Ont., kill 12 people, including four children, and destroy 300 to 400 homes in 20 communities. Hundreds of millions of dollars worth of property was destroyed.
- Aug. 7, 1979: Two people killed, 130 injured by a tornado described as "a train building up steam" that flattened Woodstock, Ont.
- June 19, 1978: One person killed, 14 injured in southeast Manitoba by two tornadoes.

Forces ready, not called in

Civic officials were flown over the disaster sites in armed forces helicopters Friday evening to assess the damage, said a forces spokesman.

Capt. Barry Charles, aide to the CFB Edmonton base commander, said he believed Mayor Laurence Decore and Police Chief Leroy Chahley were among the officials aboard the two choppers.

That was the only active role the Canadian Armed Forces had taken in the storm relief by 9:30 p.m. Friday. But about 400 people remained on stand-by alert to help if needed.

Charles said civilian authoritoies were handling the situation but were aware the armed forces could help on short notice.

"We have manned a command post and . . . have put personnel in place if needed," he said.

He said the armed forces had ready: ambulances and paramedics; heavy-duty vehicles to reach islolated areas; firefighters; search and rescue technicians; and troops to deal with possible looting.



Trees stripped of their leaves and demolished buildings are evidence of power of tornado

Two hours of terror

Aerial view of the massive wreckage at the Evergreen Mobile Home Park Friday afternoon

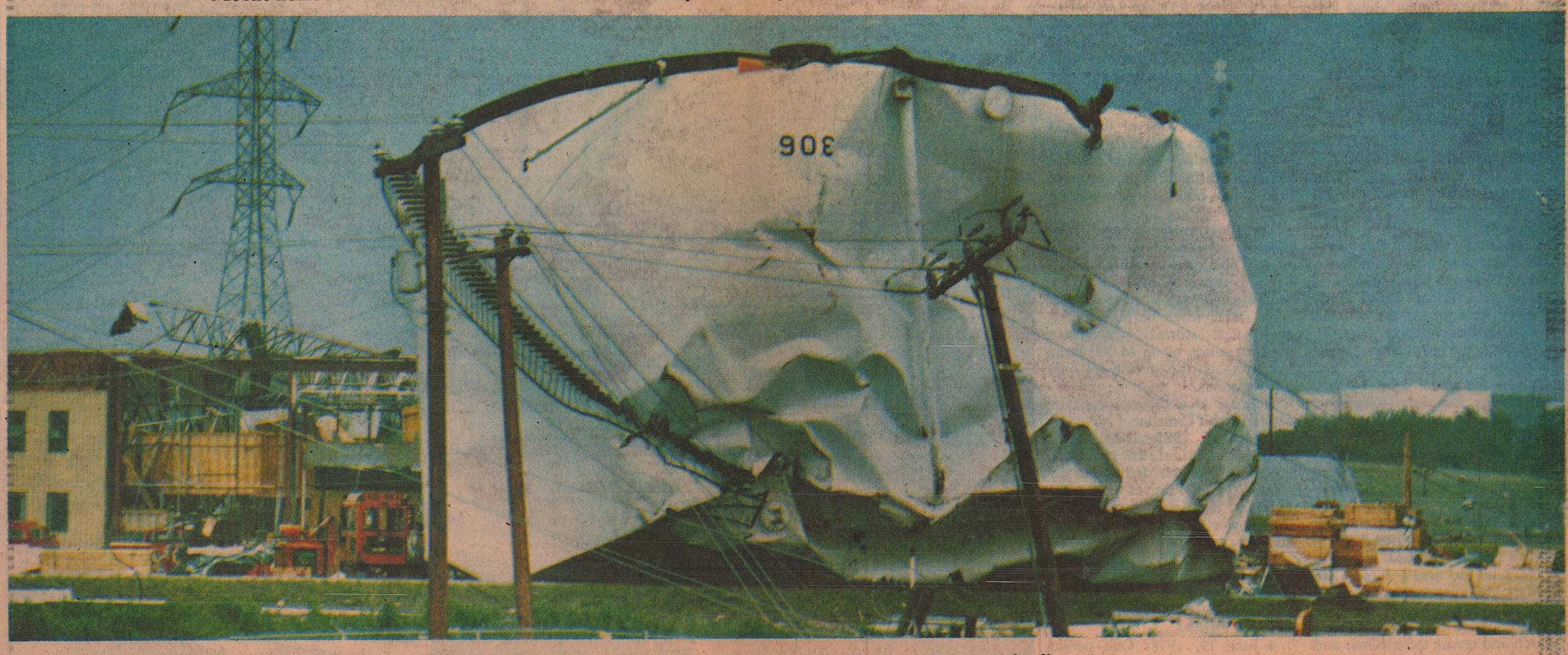


Mobile home residents Lambert Barteld and his wife Betty sift through debris



Man on stretcher near 64th Avenue and 30th Street

Pictures: Steve Simon, Brian Gavriloff, Ken Orr and Mike Pinder



Huge oil storage tank crumpled by the force of a tornado in the area of refinery row

Earlier warning about twisters might have save lives, mayor says

EDMONTON (CP) — Mayor Laurence Decore has charged that not enough warning was given to area residents before several killer tornadoes slashed through Edmonton Friday.

But officials of the Alberta Weather Office say their warning procedures are standard across North America.



Decore
Warning lacking

"I think we should have had more warning," Decore told reporters. "Perhaps an extra half hour, an extra 15 minutes could have made a difference to us.

"I'd rather err on the side of caution than not."

The weather office's policy is that a funnel cloud is not considered a tornado until it touches down and causes damage. No tornado warnings are issued until that happens.

Decore said the first tornado bulletin was issued at 3:07 p.m. Minutes later, a vicious funnel cloud ripped through the city, leaving a path of death and destruction in its wake.

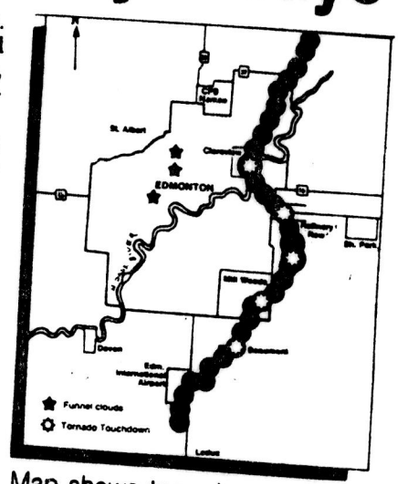
An earlier warning might have saved lives, Decore said. The warnings are sent to television and radio stations so the public can be alerted of potential weather problems.

But meteorologist Dave Burnett defended the procedure followed Friday.

"The mayor is incorrect if he thinks we knew it was going to happen but didn't tell anyone because of a silly procedure preventing us from (issuing) a warning," Burnett said. "The case is we don't know there's going to be a tornado until it is spotted."

Weather officials use a "carefully planned and honed" warning system modelled after similar systems throughout North America, he said.

Burnett agreed with Decore that it is better to err on the side of caution, but added there is a danger that "crying wolf" too often could lead to public apathy.



Map shows tornadoes' route

The weather office initially issued a severe weather watch for Edmonton and surrounding districts at 1:40 p.m. Friday. By 2:45 p.m., a more serious "severe weather warning" was issued.

At 2:55 p.m., a weather watcher in Leduc, just south of Edmonton, spotted a funnel cloud touch down. A tornado warning was sent out at 3:07 p.m.

Québec, Le Soleil, lundi 3 août 1987

« Nous aurions dû être avertis plus tôt »

Le maire blâme la lenteur du bureau météorologique

♦EDMONTON (d'après PC) - Le maire Laurence Decore d'Edmonton a déclaré que les habitants de la région n'ont pas été avertis suffisamment tôt avant que les tornades meurtrières frappent la ville, vendredi dernier.

De son côté, le bureau météorologique d'Alberta maintient que sa façon de lancer un avertissement météorologique correspond aux normes nord-américaines.

« Je suis persuadé que nous aurions dû être avertis plus tôt, a déclaré M. Decore à des journalistes. Peut-être qu'une demi-heure de plus, ou 15 minutes de plus auraient pu faire une grande différence.

« J'aurais préféré plus de précaution que moins. »

Selon les normes du bureau de la météo, un nuage en forme d'entonnoir n'est pas considéré comme une tornade tant qu'il ne vient pas en contact avec le sol et ne cause des dommages. On n'émet aucun avertissement avant que ces conditions ne soient remplies.

Decore a souligné que le bulletin signalant la première tornade a été émis à 15h07. Quelques minutes plus tard, le nuage caractéristique frappait la ville, semant derrière lui mort et destruction.

Un avertissement diffusé plus tôt aurait pu sauver des vies, a continué Decore. De tels avertissements sont expédiés aux stations de radio et de télévision qui en assurent la diffusion.

Le météorologue Dave Burnett, pour sa part, a pris la défense de la procédure suivie vendredi.

« Le maire est dans l'erreur s'il croit que nous savions ce qui devait arriver et que nous ne l'avons pas dit en raison d'une procédure stupide qui nous a empêchés d'émettre un avertissement, a dit Burnett. En fait, nous ne savons pas qu'il y aura une tornade avant de la voir. »

Burnett s'est dit d'accord avec Decore qu'il est mieux d'exagérer sur le plan précaution, mais a ajouté qu'il est permis de penser que de « crier au loup » trop souvent pourrait entraîner l'apathie du public.

Le bureau de la météo avait d'abord émis un avertissement météorologique pour la région d'Edmonton à 13h40, vendredi. À 14h45, un avertissement plus sérieux a été lancé.

À 14h55, une tornade a été signalée à Leduc, au sud de la ville et un avertissement de tornade devait suivre à 15h07.●

Weather & Climate / 7- Meteor et Climat

Edmonton Journal Aug. 16/87 E-6

Tornado warning time OK--survey

By DON THOMAS
Journal Staff Writer

Preliminary results of a public opinion survey on the July 31 tornado show little unhappiness with warnings issued, says a University of Alberta research worker

Full-page ads which appeared in newspapers last weekend, paid for by the City of Edmonton, sought a variety of information concerning incidents before, during and after the tornado.

So far about 600 people have replied, mostly from fringe areas of the tornado path along the east edge of Mill Woods and Clareview and some from affected industrial areas and Evergreen Mobile Home Park.

"There have been very few people who have been extremely critical of the warning given, abou' two people as I recall," says technician Terry Thomson, who is making an initial scan of the results

"The general consensus where people did fill in about the length of warning time was that they thought the Alberta Weather Centre did the best they could do under the circumstances," he said.

Mayor Laurence Decore questioned the short notice given by the weather office which didn't issue a tornado warning until a funnel was seen.

"One fellow made a suggestion I hadn't seen before that information about what to do in case a tornado approaches should be put in the front of the telephone book," said Thomson.

"A few people also thought the air raid sirens should have been activated. I don't know if they even work any more."

The sirens, in older parts of the city, were erected during the height of the Cold War in the late 1950s to provide warnings in case of Soviet attack.

"We also heard from some psychics, including a woman who said she knew she wouldn't be harmed so she stood and watched."

There have also been unconfirmed reports of tornado activity far from Edmonton, in the Camrose and Whitecourt areas, he said.

The U of A meteorologists want information on warnings, clouds of unusual shape or color, unusual hailstones, whether multiple tornado funnels were seen and what they looked like and damages suffered.

Results will be used to see whether the storm warning system needs improvement as well as to chronicle the build-up and development of the storm.

Information will be plotted on maps to provide a composite picture of the storm with the help of experts from the Alberta Research Council, says Thomson.

"We would like to have a few more in, if possible. We thought the response would be greater but we've never done anything like this before.

"We'd like to hear from more people from outlying areas so we can get some idea what the extent of the rain and hail was. We don't know the extent of the heavy hail and the heavy rains."

7500
870814 MJ
OTTAWA/HULL CKBY 19:00 NEWS

SUBJECT: PEOPLE IN EDMONTON HAD AN 18 MINUTE WARNING OF THE UPCOMING TORNADO.

ANNOUNCER: ENVIRONMENT CANADA SAYS THE PEOPLE OF EDMONTON HAD 18 MINUTES ADVANCED WARNING OF LAST MONTH'S TRAGIC AND DEVASTATING TORNADOES.

M. KOPITZ: THE EDMONTON TORNADOES OF JULY 31ST LEFT 27 PEOPLE DEAD, HUNDREDS INJURED AND OVER $ 250 000 000 IN PROPERTY DAMAGE. ENVIRONMENT CANADA IN A PRELIMINARY REPORT ON THE TRACKING OF THE TORNADOES SAYS A SEVERE WEATHER WATCH AND WARNING WERE IN EFFECT AT 2:45 EDMONTON TIME. THE FIRST REPORTS OF THE TORNADOES TOUCHING DOWN CAME 14 MINUTES LATER. A TORNADOE WARNING WAS GIVEN TO THE MEDIA AT 3:07 PROVIDING THE INDUSTRIAL PARK WITH 18 MINUTES WARNING AND 48 MINUTES WARNING TO THE EVERGREEN TRAILOR PARK. THE DEPARTMENT SAYS THESE LEAD TIMES ARE CONSIDERED INTERNATIONALLY AS STATE OF THE ART. MARK KOPITZ, NEWS RADIO.0814

30
TEXTE 20 510507

Regina Leader-Post (A-20) aug. 15/87 3-

Environment Canada report examines Alberta twisters

EDMONTON (CP) — The killer tornado that hit Edmonton July 31 was a swirling monster compared with the seven other tornadoes known to have touched down in the city since 1889, says an Environment Canada report.

But unlike its much weaker predecessors, some of which touched down in the heart of the city, the July tornado, which killed 27 people, stayed away from more populated areas.

"There's no particular reason it didn't come straight through the city, but we're fortunate it didn't," Al Wallace of Environment Canada said Wednesday.

A preliminary report written by Wallace, in charge of tracking severe storms at the Alberta Weather Centre, was released Tuesday.

It says between 1960 and 1982 an average of between eight and nine tornadoes were reported annually in the province. Since then, reports have increased, largely because of increased public awareness. From 1983 to 1986, there were 17, 12, 15 and 21 sightings reported.

The study breaks the 65-minute July 31 storm into 10- or 20-minute stages that describe what tornado tracker Keith Hage calls the most destructive twister in Alberta history.

Initial reports said several tornadoes touched down in the Edmonton area, but Wallace said so far there has been no confirmation this was the case and officials are treating the July 31 storm as "one major event."

The report says unusually hot and humid weather in the days leading up to the tornado set the stage for a major storm.

The report, quoting Hage, says there have been seven other documented cases of tornadoes in Edmonton in the last 98 years "but these touch-downs were brief and intermittent."

The July 31 tornado stayed on the ground for more than an hour — from 3:01 p.m., when it was first reported as touching down south of Edmonton, to its dissipation northeast of the city at 4:05 p.m.

Its black fury, fed by winds up to 330 kilometres an hour, cut a swath of death and destruction that ranged in width from the length of a football field to one kilometre, the report says.

It moved at an average speed of 35 kilometres an hour and covered a distance of 40 kilometres, gaining and losing strength as it veered one way and then the other.

Transmission towers were toppled and buildings obliterated. Cars and trucks were picked up and moved considerable distances. Train cars were derailed.

Hage, professor emeritus at the University of Alberta, has compiled a history of tornadoes in Western Canada. He said the seven previous Edmonton tornadoes were weak and isolated.

The most recent before July was in 1968 when 80-year-old trees were torn out of the ground in an unpopulated area at the junction of the Whitemud and Blackmud Creeks.

The most serious before July was in 1931 when an abandoned brick service station near downtown was demolished and a child badly injured.

"There have been other tornadoes in Alberta with a track that long but one with a track that wide is unusual anywhere in the world," Hage said in an interview Wednesday.

The tornado capped a week of often violent weather, including hailstorms and violent winds, which followed on the heels of a hot spell.

On the morning of the tornado it was sunny, with a southerly flow of warm, moist air.

As the day wore on, temperatures and humidity rose. Thunderstorms developed and began moving from the Rocky Mountain foothills north toward Edmonton.

At the same time, a cold front was heading east toward the city. A series of thunderstorms developed rapidly to the southeast and moved quickly toward Edmonton.

A new thunderstorm cell "developed explosively ahead of the line," in the Leduc area south of the city and moved northward. "This would prove to be the storm that produced the tornado," the report says.

The tornado was tracked through the Beaumont area south of Edmonton, where limited damage occurred, and through the southeast residential neighborhood of Millwoods.

It then swept through an industrial area where severe damage and some deaths took place and through the Clareview residential area, where some houses were demolished.

In its final 15 minutes, the tornado rapidly weakened and then regained strength, devastating a mobile home park where 15 people died and 133 trailers were destroyed.

Hage said his study of tornadoes suggests parts of southwest Manitoba and southeast Saskatchewan are a northern extension of the United States Midwest tornado belt.

Most tornadoes in Western Canada hit those regions. He has a theory tornadoes in Alberta, which is quite often struck by hailstorms, may be influenced by the Rocky Mountains.

"There's no evidence," he said. "The highest numbers of tornadoes were reported in the 1920s and 30s, but that was when there were more farmers around to spot them."

The Red Cross said 253 people were admitted to hospital following the July tornado for treatment of injuries ranging from bruises and scratches to severe wounds and broken bones inflicted by flying debris.

About 50 victims were still in hospitals this week. More than 100 families lost their homes and emergency shelter was provided for 89 of them, Red Cross spokesman Marge White said.

The other families likely stayed with family or friends, she said, adding the Red Cross received 11,000 calls from people outside Edmonton concerned about relatives or friends.

As of Monday, a tornado relief fund being handled by the Red Cross stood at $328,414, almost $31,000 of it from people and groups outside the province.

The Insurance Bureau of Canada has estimated total insured damage at $250 million. Provincial and civic officials say there is no accurate damage estimate in terms of business losses.

But Jim Common, reeve of Strathcona County, where most of the damage to businesses was done, said between 90 and 100 businesses were hit, most of them in an industrial park.

He estimated damage to businesses in that area alone at $100 million. Overall, more than 300 people have been laid off at an estimated cost of $250,000 in unemployment insurance.

Blaine Alexander, economic development manager with the Edmonton Economic Development Authority, estimated 400 businesses — 135 in Edmonton — sustained some type of damage.

Best Quality available

Toronto Star Aug 3

Twister claims husband, 3 children

EDMONTON (CP) — Tragedy struck Arlene Reimer on Friday.

With devastating speed, a tornado killed Reimer's husband, two daughters and a son.

Marvin, 40, Diane, 13, and 11-year-old twins Darcy and Dawn were among the 14 people killed at the Evergreen trailer park, in the northeastern corner of Edmonton.

The series of twisters crumbled buildings and smashed cars, killing 26 people and leaving hundreds homeless before wending their way north of the city limits.

Darren Wasylyshen, a close family friend, said the reality of what happened is sinking in for Reimer. She left the city yesterday to make funeral arrangements for her family in Boyle, a tiny village about 80 kilometres (50 miles) north of Edmonton.

"You can figure how it is," Wasylyshen said.

He said the Reimers were a happy family and good friends. The children were nice, fun-loving kids, he said.

"They'd do anything for you."

He said Reimer was at work at an auto parts distributing business in nearby Sherwood Park when the savage black funnel touched down southeast of Edmonton and then snaked their way north to the trailer park, where the family had lived for about 1 years.

The bodies weren't identified until Saturday afternoon.

Wasylyshen said Reimer had two adult children from a previous marriage who don't live in Edmonton. He said she's been staying with his family since the disaster and probably will continue to do so for awhile.

"She's got no other place to go," he said.

Red Cross sets up hotline service and relief fund

Red Cross Society headquarters in Toronto has set up two new hotline numbers for residents who want to check on friends and relatives in the wake of the Edmonton tornadoes.

The direct Edmonton lines are 403-423-2680 and 403-422-0619. The Toronto number is 960-3175. The Edmonton numbers were set up for specific inquiries only. Alberta Government Telephones officials are appealing to people to limit their calls to the province because lines are overloaded.

Aid for tornado victims can be donated at any branch of the Toronto Dominion Bank. Cash raised will be forwarded to the Canadian Red Cross. Receipts will be issued.



CP PHOTO

Miracle baby: Mary Grandish gives son Cody, 3 months, a hug at the hospital where he was being treated for a fractured skull on the weekend. He was pulled from his crib and buried by debris when the tornado hit the family home. They waited out the storm in the bathroom.

Baby flung 50 metres survives twister

continued from page A1

ing on a bus with her own four children. An Edmonton police officer was running with the infant but Athanasopoulos recognized her as Kristen.

Athanasopoulos took Kristen and handed her over to Edmonton police Sergeant Bill Clark.

"I just kept poking at her and making her to keep her crying because when she stopped crying her eyes kept rolling back into

m just a mother myself. I babies but especially Kris- he was very special to me."

ark, who rushed the baby to tal, said, "It was just may- There were people all over. ok me 40 minutes with my s and sirens to reach the ital.

don't even know if it was a or a girl. It was wearing a T- and diaper."

ordmarken was worried t his granddaughter being y hailstones when he left his by home after hearing a report of the severe storm.

Heard report

his way, he heard another o report giving the horrify- scope of the damage, and "I ed the corner and I saw ything was gone.

just went crazy and I started ing at the rubble with my is looking for Kristen.

t's hard to explain, but at a like that you just don't care ink. You just go crazy.

guy came over and told me took the family to the hospi- But they didn't know where aby was.

e said, 'You could look at the ing across the street.' I look- at it and realized it was a gue.

said, 'no, no, I ain't looking dead people. I want live peo- "

s the family pieced events to- her yesterday, they surmised Kristen must have hurtled ugh a window that had been n out by the wind.

lonique Gregoire was pinned eath the rubble, but she said was never so seriously hurt or riented that she forgot about child.

When Marin came to me in hospital Friday night and told Kristen was okay, I just could- believe it.

Tornado victims get condolences from the Queen

EDMONTON (CP) — News of destruction caused by day's tornadoes moved the een to send a telegram on the kend, extending her sympa- to victims and their families. I was deeply shocked to hear the dreadful tornado which caused such widespread oc in Edmonton," the Queen l in a telegram to Alberta tenant-Governor Helen Hun-

lease pass my deepest athy to those who have so cally been bereaved and all thers who have suffered," he telegram, signed Eliza-

Families start piecing together remains of their shattered lives

By Darcy Henton Toronto Star

EDMONTON — First came horror, then shock and finally the dull realization of crushing, heart-rending loss.

For the hundreds hit by Friday's tragic tornado ordeal, yesterday was a day of accounting.

Beneath a gloomy sky, they probed the wreckage that was once their homes and settled to the task of literally picking up the pieces of their lives.

In rain jackets and black plastic garbage bags to ward off the wind-driven rain, they poked and prodded through many of the 200 storm-ravaged lots at the Evergreen Mobile Home Park.

For some, there was nothing to salvage.

Where their homes once stood, there are only bulldozer tracks in the mud.

"They're the unlucky people," said Constable Doug Laws of Edmonton police as he surveyed the desolate scene. "They have absolutely zippo."

He said the sites were bulldozed clean just hours after the tornado struck Friday as police and firefighters conducted a morbid search for bodies.

Like a bomb

This was where the majority of the trailer park's 14 dead were found, he explained, and those who survived never had a chance to save even a souvenir of the days before Black Friday.

"I cried when I saw what was left of my place," choked Bruce Osborne, 29, as he made his way to a waiting bus with two plastic garbage bags of clothes picked from his yard. "It just looked like an atomic bomb had been dropped here. I just can't believe it."

Volunteers from the Community Police Radio Network, who walked into the sites with the shaken victims to provide moral support, said many still can't grasp the extent of their loss.

"I don't think it's going to really hit them until next week," said Heather Sturgess, 39, as she waited for the next busload to arrive at the trailer park. "For many it will take some time for the shock to wear off."

On the other side of the park, Andy Heron, 50, an unemployed pipefitter, found a pair of work boots in the rubble that for 12 years was his home.

This is his second visit to the site.

"I was here earlier, but I had to leave," he explains. "My wife was waiting out there crying so I had to go back."

The Herons were not home when the tornado came calling, but death left a calling card.

A family relative, Kelly Pancell, 18, died just up the street, leaving 3-week-old Meagan without a mother.

As Heron probed the wreckage of what was once a 20-metre (68-foot) mobile home, he pondered his uncertain future.

His trailer was partially insured, but his truck and camper were not.

"I just took the insurance off last week because I couldn't afford to pay it when I didn't have a job. Now they're both gone."

One wall left

In financial straits and living off the charity of relatives, he clings to the promise of Alberta Premier Don Getty that some assistance will be provided.

"We'll just have to see what happens, I guess. Whether they will replace the trailer or not, I'll just have to wait and see."

His nephew, Henry Merchant, is fearful that help may not be forthcoming.

"The government might help, but then again, they don't always live up to their word, you know. We'll just have to try to help him out the best we can."

Over in the more affluent Claireview subdivision, Rod Grandish also clings to a Getty promise made personally to him when the premier visited the neighborhood in the wake of the storm.

The premier's visit and the arrival of a team of insurance adjusters yesterday has improved his outlook.

Although faced with the ironic task of having to renew the insurance and mortgage on a house that barely exists, he and his wife Mary have been assured that everything will be taken care of.

The insurance company has told him he can find a place to live and they'll pay the rent until the storm-razed, $87,000 three-bedroom bungalow is rebuilt, but he'll be paying a $900 a month mortgage on a house that has only one wall, he said.

To the 27-year-old trucking and welding company partsman, the remaining wall is worth 100 times the price.

It was against that wall that his wife and her best friend were pressed when the black funnel in the sky vented its wanton destruction on the neighborhood.

"I was looking out the back door window when the roof came crashing down," said his wife Mary, 27, an Alberta Government Telephones clerk.

May not stay

"I slammed the back door shut and fell to the floor as there was this loud noise and everything began flying around and hitting us."

When the tornado passed, the two raced to the back bedroom where Cody, three and a half months old, had been sleeping in his crib, she said.

"When I saw that the room was gone and the crib was gone, I thought Cody was gone, too," she said, sniffing back tears. "Then I looked down on the floor and I found something I thought was a doll. I picked it up and it was Cody.

"There was blood streaming from his head, but he was alive."

The three hid in the bathroom, the only remaining room in the house until the winds diminished and minutes after the storm passed, her husband arrived and took them to hosital, she said.

The parents spent an anxious night at the hospital, but Cody was released with only cuts and bruises Saturday, she said.

Rod Grandish said the couple will rebuild their home, but they may not want to stay in it.

"We love this place, but I don't think I can stay," his wife said. "I think what happened will always bother me."

Names of victims killed by storm in Edmonton

EDMONTON (CP) — Here is a list of people killed in the Edmonton tornadoes, as supplied by the Alberta chief medical examiner's office. All are believed to have been residents of Edmonton:

Jim Allan, 51; Sharon Andruchow, 15; Merle Bain, 50; Marie Barker, 50; Manuel Carreiro, 38; George Demetrios, 19; Edward Dery, 40; Ajmer Dhaliwal, 30.

Lloyd Fankhanel, 55; Richard Gillespie, 29; Frederick Hartfeil, 34; Daniel Lewis, 18; To Ly, 46; Edito Mendosa, 40; Clement Nault, 54; Alfred Nolin, 82; Etta Nolin, 73; Graham Palmer, 43; Kelly Pancel, 18; Mary Putnam, 59; Diane Reimer, 13, Darcy Reimer, 11; Dawn Reimer, 11; Marvin Reimer, 40; Patricia Robinson, 30; Gregory Trabenik, 41.

Toronto Star Aug 3

Twister claims husband, 3 children

EDMONTON (CP) — Tragedy struck Arlene Reimer on Friday.

With devastating speed, a tornado killed Reimer's husband, two daughters and a son.

Marvin, 40, Diane, 13, and 11-year-old twins Darcy and Dawn were among the 14 people killed at the Evergreen trailer park, in the northeastern corner of Edmonton.

The series of twisters crumbled buildings and smashed cars, killing 26 people and leaving hundreds homeless before wending their way north of the city limits.

Darren Wasylyshen, a close family friend, said the reality of what happened is sinking in for Reimer. She left the city yesterday to make funeral arrangements for her family in Boyle, a tiny village about 80 kilometres (50 miles) north of Edmonton.

"You can figure how it is," Wasylyshen said.

He said the Reimers were a happy family and good friends. The children were nice, fun-loving kids, he said.

"They'd do anything for you."

He said Reimer was at work at an auto parts distributing business in nearby Sherwood Park when the savage black funnel touched down southeast of Edmonton and then snaked their way north to the trailer park, where the family had lived for about 1 years.

The bodies weren't identified until Saturday afternoon.

Wasylyshen said Reimer had two adult children from a previous marriage who don't live in Edmonton. He said she's been staying with his family since the disaster and probably will continue to do so for awhile.

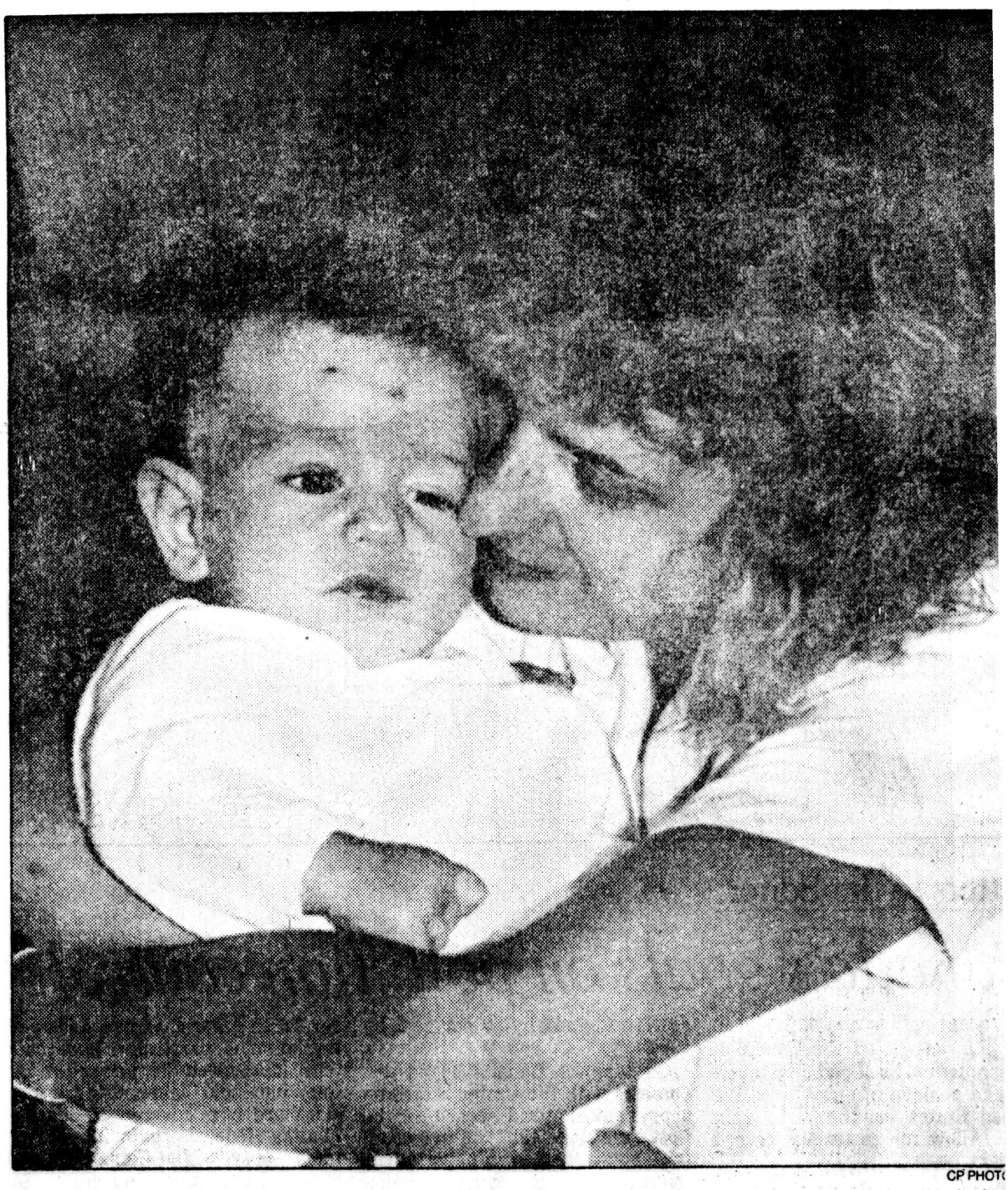
"She's got no other place to go," he said.

Red Cross sets up hotline service and relief fund

Red Cross Society headquarters in Toronto has set up two new hotline numbers for residents who want to check on friends and relatives in the wake of the Edmonton tornadoes.

The direct Edmonton lines are 403-423-2680 and 403-422-0619. The Toronto number is 960-3175. The Edmonton numbers were set up for specific inquiries only. Alberta Government Telephones officials are appealing to people to limit their calls to the province because lines are overloaded.

Aid for tornado victims can be donated at any branch of the Toronto Dominion Bank. Cash raised will be forwarded to the Canadian Red Cross. Receipts will be issued.



CP PHOTO

Miracle baby: Mary Grandish gives son Cody, 3 months, a hug at the hospital where he was being treated for a fractured skull on the weekend. He was pulled from his crib and buried by debris when the tornado hit the family home. They waited out the storm in the bathroom.

Baby flung 50 metres survives twister

ontinued from page A1

ng on a bus with her own four ildren. An Edmonton police ficer was running with the int but Athanasopoulos recogzed her as Kristen.

Athanasopoulos took Kristen d handed her over to Edmonn police Sergeant Bill Clark.

"I just kept poking at her and aking her to keep her crying cause when she stopped crying r eyes kept rolling back into

m just a mother myself. I babies but especially Kris- she was very special to me."

rk, who rushed the baby to ital, said, "It was just may- There were people all over. ok me 40 minutes with my s and sirens to reach the ital.

don't even know if it was a or a girl. It was wearing a T- and diaper."

ordmarken was worried t his granddaughter being y hailstones when he left his by home after hearing a o report of the severe storm.

Heard report

his way, he heard another o report giving the horrifyscope of the damage, and "I ed the corner and I saw ything was gone.

just went crazy and I started ing at the rubble with my ds looking for Kristen.

t's hard to explain, but at a like that you just don't care nink. You just go crazy.

guy came over and told me took the family to the hospi- But they didn't know where baby was.

le said, 'You could look at the ding across the street.' I lookat it and realized it was a gue.

said, 'no, no, I ain't looking dead people. I want live peo- "

s the family pieced events toher yesterday, they surmised t Kristen must have hurtled ough a window that had been vn out by the wind.

lonique Gregoire was pinned eath the rubble, but she said was never so seriously hurt or riented that she forgot about child.

When Marin came to me in hospital Friday night and told Kristen was okay, I just couldbelieve it.

Tornado victims get condolences from the Queen

EDMONTON (CP) — News of destruction caused by day's tornadoes moved the een to send a telegram on the kend, extending her sympato victims and their families.

I was deeply shocked to hear the dreadful tornado which caused such widespread oc in Edmonton," the Queen l in a telegram to Alberta tenant-Governor Helen Hun-

lease pass my deepest athy to those who have so cally been bereaved and all thers who have suffered," he telegram, signed Eliza-

Families start piecing together remains of their shattered lives

By Darcy Henton Toronto Star

EDMONTON — First came horror, then shock and finally the dull realization of crushing, heart-rending loss.

For the hundreds hit by Friday's tragic tornado ordeal, yesterday was a day of accounting.

Beneath a gloomy sky, they probed the wreckage that was once their homes and settled to the task of literally picking up the pieces of their lives.

In rain jackets and black plastic garbage bags to ward off the wind-driven rain, they poked and prodded through many of the 200 storm-ravaged lots at the Evergreen Mobile Home Park.

For some, there was nothing to salvage.

Where their homes once stood, there are only bulldozer tracks in the mud.

"They're the unlucky people," said Constable Doug Laws of Edmonton police as he surveyed the desolate scene. "They have absolutely zippo."

He said the sites were bulldozed clean just hours after the tornado struck Friday as police and firefighters conducted a morbid search for bodies.

Like a bomb

This was where the majority of the trailer park's 14 dead were found, he explained, and those who survived never had a chance to save even a souvenir of the days before Black Friday.

"I cried when I saw what was left of my place," choked Bruce Osborne, 29, as he made his way to a waiting bus with two plastic garbage bags of clothes picked from his yard. "It just looked like an atomic bomb had been dropped here. I just can't believe it."

Volunteers from the Community Police Radio Network, who walked into the sites with the shaken victims to provide moral support, said many still can't grasp the extent of their loss.

"I don't think it's going to really hit them until next week," said Heather Sturgess, 39, as she waited for the next busload to arrive at the trailer park. "For many it will take some time for the shock to wear off."

On the other side of the park, Andy Heron, 50, an unemployed pipefitter, found a pair of work boots in the rubble that for 12 years was his home.

This is his second visit to the site.

"I was here earlier, but I had to leave," he explains. "My wife was waiting out there crying so I had to go back."

The Herons were not home when the tornado came calling, but death left a calling card.

A family relative, Kelly Pancell, 18, died just up the street, leaving 3-week-old Meagan without a mother.

As Heron probed the wreckage of what was once a 20-metre (68-foot) mobile home, he pondered his uncertain future.

His trailer was partially insured, but his truck and camper were not.

"I just took the insurance off last week because I couldn't afford to pay it when I didn't have a job. Now they're both gone."

One wall left

In financial straits and living off the charity of relatives, he clings to the promise of Alberta Premier Don Getty that some assistance will be provided.

"We'll just have to see what happens, I guess. Whether they will replace the trailer or not, I'll just have to wait and see."

His nephew, Henry Merchant, is fearful that help may not be forthcoming.

"The government might help, but then again, they don't always live up to their word, you know. We'll just have to try to help him out the best we can."

Over in the more affluent Claireview subdivision, Rod Grandish also clings to a Getty promise made personally to him when the premier visited the neighborhood in the wake of the storm.

The premier's visit and the arrival of a team of insurance adjusters yesterday has improved his outlook.

Although faced with the ironic task of having to renew the insurance and mortgage on a house that barely exists, he and his wife Mary have been assured that everything will be taken care of.

The insurance company has told him he can find a place to live and they'll pay the rent until the storm-razed, $87,000 three-bedroom bungalow is rebuilt, but he'll be paying a $900 a month mortgage on a house that has only one wall, he said.

To the 27-year-old trucking and welding company partsman, the remaining wall is worth 100 times the price.

It was against that wall that his wife and her best friend were pressed when the black funnel in the sky vented its wanton destruction on the neighborhood.

"I was looking out the back door window when the roof came crashing down," said his wife Mary, 27, an Alberta Government Telephones clerk.

May not stay

"I slammed the back door shut and fell to the floor as there was this loud noise and everything began flying around and hitting us."

When the tornado passed, the two raced to the back bedroom where Cody, three and a half months old, had been sleeping in his crib, she said.

"When I saw that the room was gone and the crib was gone, I thought Cody was gone, too," she said, sniffing back tears. "Then I looked down on the floor and I found something I thought was a doll. I picked it up and it was Cody.

"There was blood streaming from his head, but he was alive."

The three hid in the bathroom, the only remaining room in the house until the winds diminished and minutes after the storm passed, her husband arrived and took them to hosital, she said.

The parents spent an anxious night at the hospital, but Cody was released with only cuts and bruises Saturday, she said.

Rod Grandish said the couple will rebuild their home, but they may not want to stay in it.

"We love this place, but I don't think I can stay," his wife said. "I think what happened will always bother me."

Names of victims killed by storm in Edmonton

EDMONTON (CP) — Here is a list of people killed in the Edmonton tornadoes, as supplied by the Alberta chief medical examiner's office. All are believed to have been residents of Edmonton:

Jim Allan, 51; Sharon Andruchow, 15; Merle Bain, 50; Marie Barker, 50; Manuel Carreiro, 38; George Demetrios, 19; Edward Dery, 40; Ajmer Dhaliwal, 30.

Lloyd Fankhanel, 55; Richard Gillespie, 29; Frederick Hartfeil, 34; Daniel Lewis, 18; To Ly, 46; Edito Mendosa, 40; Clement Nault, 54; Alfred Nolin, 82; Etta Nolin, 73; Graham Palmer, 43; Kelly Pancel, 18; Mary Putnam, 59; Diane Reimer; 13, Darcy Reimer, 11; Dawn Reimer, 11; Marvin Reimer, 40; Patricia Robinson, 30; Gregory Trabenik, 41.

Toronto Star AUG 10/87

Tornado insurance costs could rise, official warns

EDMONTON (CP) — In the wake of Edmonton's tornado, insurance companies will consider raising premiums to pay for any future disasters, an industry spokesman says.

Insurers will assess the risk of more tornadoes and whether this threat should be factored into homeowners' insurance, said Alan Wood, regional vice-president of the Insurance Bureau of Canada.

"Is this just a once-in-a-lifetime thing, or is the weather pattern changing?" will be one question considered, Wood said on the weekend.

But, he said, any increase in premiums for homeowners would be small. "They may find their premiums go up by only a couple of dollars."

High-risk area

Claims in the Edmonton area arising from the July 31 tornado are expected to total $250 million, with an estimated $150 million of that from commercial customers, Wood predicted.

Some of the areas that insurance companies will examine could include weather patterns over the past few years, where tornadoes have touched down in the past, and changing population patterns.

The increasing population of the province might make the long-acknowledged presence of tornadoes in Alberta more of a risk to residents and insurers, he said.

"Have we paid any attention to the fact there are tornadoes in Alberta?" he asked, suggesting a study could reveal that certain areas of the province are tornado zones.

If that proves to be the case, he said, insurance companies could label certain parts of the province as high-risk areas, and homeowners' premiums would reflect this.

Wood noted that homeowners' fears raised by the tornado could also reduce the need for a premium increase.

Since the disaster, insurers have been receiving calls from people double-checking their coverage levels, and in many instances they have chosen to pay higher premiums for extra coverage, Wood said.

The requests for increased coverage are common after disasters, he said.

SUNDAY STAR. Aug 2/87.

Frenzied hospital looked like a wartime casualty ward

By Darcy Henton Toronto Star

EDMONTON — For several hours, the emergency room of the Royal Alexandra Hospital was like a scene from the television show M*A*S*H.

The disruptive thud of a helicopter rotor at the top of the emergency room ramp pounded above a background of anguished and often hysterical voices in the room just a few footsteps away.

Ambulance attendants raced down the ramp time and time again, clutching injured infants and pushing wheeled stretchers in a life-saving frenzy as the chopper took off and landed in gusting winds with only inches of room to spare.

In the space of a few chaotic hours, a dozen harried doctors and two dozen nurses treated more than 120 tornado victims at the busiest hospital in town.

For the emergency room's Dr. Donald Nixon, it was a night to remember as the skilled medical team worked calmly amid pandemonium.

In one half-hour stretch, 15 patients — more than half of whom were seriously injured and emotionally upset — arrived at the 917-bed downtown hospital.

"When standing back a distance there's no question it appeared chaotic, but the basic principle of emergency management was there," Nixon said.

Extensive injuries

"The victims were confused, agitated . . . and to some degree hysterical," he said, and the biggest problem medical staff faced was keeping them and their relatives relaxed.

Four patients were admitted in critical condition, one was serious but stable, and 10 required immediate surgery for injuries that closely resembled those of car accident victims.

Deputy medical examiner Graeme Dowling said about four of the 25 people killed during the tornadoes had injuries so extensive their families were not allowed to see them.

"We would never ask a family member to come in and view them because of facial damage that would be terribly traumatic for them; and their opinion of who the person was could not be relied upon," he said.

Some witnesses said they saw victims with their faces torn off.

Chief medical examiner John Butt said most of the dead suffered a number of severe blows of which several could likely have been fatal.

"The majority of the bodies have been subjected to blunt-force trauma," he said. "In many cases there were chest, rib and lung injuries, hemorrhages of major vessels and broken bones and skulls. I think in most cases death would have been instantaneous."

Butt said the fatal injuries were likely caused by the force of the victim decelerating or being hit by objects or both.

Royal Alexandra Hospital patient Dix Duncan, 22, said it was as if someone had battered every part of his body.

Howling winds

He said he was reclining on his bed in a rented Evergreen Trailer Park mobile home when howling winds picked up his home and dashed it on the ground.

"I looked out the window and saw all kinds of things flying in the sky and then the trailer just started tumbling over and over," he said from the hospital's third-floor general surgical ward where he is recovering from shoulder, leg and foot injuries.

"It was just awful. I thought I was going to die."

Duncan, a cosmetics salesman who had planned to return to instructing gymnastics next week, said he was unconscious, but later somehow crawled from the wreckage of the destroyed trailer and into a neighbor's arms.

He was treated almost immediately by a paramedic on the scene and was rushed by ambulance to the Royal Alexandra.

Another resident of the mobile home park, where 350 of 600 trailers were destroyed or damaged, sat with her head bandaged, a blood-soaked bandage wrapped around her left foot and her right arm in a sling.

She didn't want to identify herself but said it was her birthday.

"It started to rain and a little bit of hail," she said. "You could see it lifting up dirt and lifting water off the road.

Edmonton opens its heart to victims as tornado leaves hundreds homeless

Continued from page A1

donated hotel rooms. Restaurants supplied free food. The Red Cross set up emergency shelters for the homeless. The Salvation Army handed out blankets and comforted survivors.

The public response to calls for blankets, clothing, toiletries and the like was so overwhelming that organizers issued a plea that people stop their donations until the initial supplies could be sorted.

A blood bank set up at the University of Alberta finally turned people away.

Offers of aid had poured in from across the country.

Prime Minister Brian Mulroney pledged the federal government will do whatever it can to help the survivors put their lives back together.

Mulroney said Canadians feel "shock, grief and sadness" at the tragedy.

Deputy Prime Minister Don Mazankowski and External Affairs Minister Joe Clark — both Alberta MPs — flew over the ravaged areas and promised federal money as soon as the province officially asks for it.

A sombre Premier Don Getty, who toured the scenes of destruction with his wife, Margaret, also promised financial support from the Alberta government.



TONY BOCK/TORONTO STAR

Belongings saved: Lisa Eiddiscomb treks through mud after salvaging some belongings from her mother's home. Trees surrounding the trailer park were draped with clothes, twisted strips of aluminum siding and shreds of pink insulation after the tornado hit.

this before," said Getty.

"It's painful," his wife added.

As he trudged across the muddy trailer park, the jeans-clad Premier knelt to pick up a soiled snapshot of a family, slipping it into his pocket. He then turned to comfort his wife, who was on the verge of tears.

The tornadoes darkened parts of the city as if the Apocalypse was at hand, then poured heavy rain and hail, hiding from the view of most the lethal funnel clouds that hit in at least five main spots.

When they touched down, they tossed cars at will, whipped homes down roadways, blew roofs and windows from those not directly in the path and wiped out industrial buildings in Edmonton's so-called Refinery Row.

Survivors from different areas told similar stories of thunderous gloom, a rushing sound like a vacuum cleaner and sudden destruction.

The tornadoes created the most havoc at the Evergreen Trailer Park in the city's northeast, where it tossed the mobile homes into the air. There 14 people died and 200 mobile homes were destroyed and 150 damaged. The park was a field of twisted wreckage and debris.

But the tornadoes cut a selective swath through the trailer park, demolishing some homes while leaving others across a street intact.

Wiped tears

The first warning from Environment Canada came only 23 minutes before the initial twister touched down.

Edmonton Mayor Laurénce Decore — wiping away tears as he surveyed the damage — said in a voice breaking with emotion that even 15 more minutes of warning would have saved lives in his city.

But as 18-year-old James Clarke said: "No one can ever be ready for something like this if you've never had one before."

The swirling black funnels had ripped off roofs, blew out concrete walls and hurled a telephone pole like a spear through a brick wall.

Most of the city was lashed by torrential rains. Buses and cars were marooned in flooded underpasses and a section of the city's light rail transit system was washed out. Pressure built up in overloaded storm sewers and popped open manhole covers.

Rescuers using long, metal rods probed and sifted through the wreckage in a grim search for bodies.

Some of the trailers were destroyed and only jagged piles of ruin remained on many lots.

Chief Medical Examiner Dr. John Butt said 11 bodies have yet

"less than 50" people who have been reported missing.

After the park was first hit, residents peeked from the carnage to search for loved ones, they were warned another funnel cloud was on its way and they were whisked into buses unaware — in many cases — if family members were dead or alive.

Medical examiners' officials are going through the painstaking process of trying to match general characteristics of the missing people with the bodies they have yet to identify.

The number of actual missing will be far fewer than 50, because they were vacationing out-of-towners who could not be contacted by anxious relatives, Butt said.

The city yesterday was a series of conflicting, dramatic images.

Some people continued the vigil begun the night before, awaiting word on family members and friends who had perished in the storm.

Others received news they had been dreading.

The news yesterday that two young children were pulled from the rubble of the Evergreen Trailer Park lifted some of the gloom.

The tornado tragedy also brought to light a number of stories of uncommon courage and heroism and a day-after realization that the death toll could have been much higher had the twisters charted a course a few kilometres to the southwest.

But yesterday's saga was largely the tale of the tens of thousands of Edmontonians who worked throughout the night and gave up the first day of a holiday weekend at aid centres.

"I simply got to thinking, if I was in a situation like that and my kid was buried under a pile of rubble . . . well, you've just got to do something," said Herman Willekes as he wheeled a cart of groceries into the Emergency Relief Service.

At 3 a.m. yesterday, some 50 volunteers were already at the centre, said founder Heather Airth.

The efforts of her volunteers were duplicated by the Edmonton Eskimo football team, which had solicited five tractor-trailer truckloads of food by mid-afternoon and the Red Cross, which was aiding the homeless at a motor inn down the road from the trailer park.

One anonymous, elderly man entered the relief centre early yesterday and handed Airth a stack of $20 bills, then walked away.

He had left $500.

Another called to say he manufactured children's clothes and could he help.

When his offer was accepted, he brought in four cases of brand new clothes.

Unsolicited, catering companies delivered food and soft drinks for volunteers and people who had never met before worked shoulder-to-shoulder through the night and early-morning drizzle.

'Feels good'

"It just feels good to help out," said University of Alberta student Greg Powlik, who was at the centre at 8 a.m.

"It makes you feel good about yourself and when you get down here and see everyone else working hard, it motivates you."

The homeless were grateful, if a little overwhelmed at the response.

One man who had lost everything, said volunteer Marlene Ritchot, came in asking for a pair of pants.

"He said he wanted just one pair, size 38 or 40," she said. "I finally talked him into taking two, but he said no more.

"He told me to help someone else."

As the day wore on, the tension brought upon by worry over the fate of family members or belongings was beginning to tell.

Brian Bowyer, 20, a gash on his forehead and his neck in a brace, told The Star how he saved his 4-week-old niece — but he still didn't know what had happened to his sister.

"I heard a sound I just can't explain," he said. "It was the sound from the worst storm you could imagine.

"I saw the sky go black through the window and then the whole window came out and flew right at me, just like in *The Poltergeist*.

"Miraculously, nothing hit me and the storm calmed briefly so I went to the back where my sister, her child and my father's girlfriend were.

"I picked all three up by myself, but after about three steps, the house lifted. It felt like a free-fall out of an airplane and somehow it was very peaceful and frightening at the same time.

"I dropped the girls and when I bent over to pick them up, I could see my sister was pinned, but as I bent over the newborn, I protected her from the ceiling as it began to cave in.

"When I woke up and saw light, Dorothy and Megan (his father's girlfriend and the newborn) were being pulled out with me.

"I still don't know about my sister."

Then there were the happy endings.

At Sherwood Park industrial area, where hundreds of buildings were destroyed, Andy Pawlenchuk was blown from the second storey of his building by the force of the twister.

He escaped injury and three hours later, police found his dog, Scamp, unharmed in the back of his truck.

Alberta disaster most vicious storm since '54 hurricane

From Canadian Press

The tornadoes that struck Edmonton Friday killed twice as many people as the twisters that hit Barrie in 1985, but 1954's Hurricane Hazel remains unparallelled in Canada for death and destruction.

The tornadoes that wrenched their way through Edmonton's southeast end killed 25 people and was the most vicious storm to hit Canada since 1954, when Hurricane Hazel killed 81 people in the Toronto area.

Hurricane Hazel cut a 300-kilometre (186-mile) wide swath around Toronto, causing more than $25 million in damage.

One of the worst natural disasters of this decade was a deadly trio of tornadoes that ripped through south-central Ontario on May 31, 1985, claiming 12 lives in the Barrie area.

Three separate twisters tore a zigzag path along a 100-kilometre (61-mile) route, leaving scattered pockets of devastation in its wake. Buildings and cars were torn apart and carried away.

Woodstock battered

Almost 200 people were admitted to hospital, many in critical condition. As many as 500 homes

In 1981, Calgary was pummelled by hail the size of golf balls when a storm pounded its way through the city July 28, killing two golfers and causing more than $100 million in damage to thousands of homes. The golfers were killed after they took refuge under a tree that was hit by lightning.

The 20-minute storm produced more than 57,000 insurance claims — bringing one of the biggest payouts for a single incident in Canadian history, an insurance official said.

In August, 1979, Woodstock was battered by a tornado that ravaged the south end of town and neighboring countryside. Two people were killed and 142 injured.

southwestern Ontario is one of the most twister-prone areas in Canada.

Abandon car, lie low if twister is sighted

WINNIPEG (CP) — If your home is in the path of a tornado like one of those that ripped through Edmonton, get to the basement or into a room with no windows.

"With high winds, glass blows out and that causes a lot of injuries," Cindy Stevens, of the Manitoba Emergency Measures Organization, said yesterday.

Since tornadoes generally travel in a straight line, the best way to avoid one outdoors is to walk or drive at a right angle to the find other low ground, she said.

Cars can easily be picked up or blown off a road.

"I guess that's scary for a lot of people because they don't want to leave the security of their car — but that's a false security," Stevens said.

Barrie passes the hat for Edmonton

BARRIE (CP) — People in this central Ontario city know what it's like when a tornado rips through town — that's why they interrupted a summer festival yesterday to help out the battered residents of Edmonton.

"People around here are pretty sensitive to tornadoes," said local radio broadcaster Hugh Brown, referring to a trio of twisters that killed 12 people and ruined about 500 houses in the Barrie area in 1985.

Brown said people attending the Kempenfest carnival on the Barrie shore of Lake Simcoe began an impromptu fundraising drive early yesterday by passing a hat around. Brown said his station, CKBB, was working with a local television station to put together on-air advertisements seeking contributions to a relief fund for Edmonton residents.



CP PHOTO

Premier tours: Alberta Premier Don Getty examines the kitchen of a mobile home in northeast Edmonton that was demolished by the tornado. Only the kitchen was left upright.

Week-old baby tossed 50 metres survived tornado with scratches

By Tim Harper Toronto Star

EDMONTON — A week-old baby hurled 50 metres by a killer tornado has survived with only a few scratches.

The funnel clouds that cut a swath of death through this city Friday made six-pound Kristen Gregoire an easy projectile.

But, 48 hours after being flung on to a street by the tornado that destroyed her mother's home, she looked up at her mother with wide-eyed bemusement from her crib at the Royal Alexandra Hospital yesterday.

Kristen was sporting only a few scratches, but mother Monique Gregoire was sporting an ear-to-ear smile and red-ringed eyes, the result of tears of relief.

☐ Twister claims woman's husband, 3 children. Page A7

What made Kristen's saga even more remarkable is that she was found on a road during Friday's mayhem, bundled in a blanket by a neighbor and passed to a policeman at the scene.

But no one knew who the infant was, and she lay in intensive care until late Friday night as Miss [illegible] until grandfather Elton Nordmarken ended a frantic family search by identifying the blue-eyed, brown-haired child.

"I was so frantic I was just freaking out," Gregoire told The Star yesterday. "I thought I was going to have a heart attack. But today she looked up at me for about five minutes."

Gregoire lived with her parents and brother at the Evergreen Trailer Park in the northeast part of the city, the area in which the storm, which killed 26, was most brutal.

Gregoire and her mother escaped injury.

The hospital yesterday listed Kristen as in serious but stable condition. Doctors will do tests today to determine whether the infant suffered brain damage, but her mother says doctors gave her an optimistic prognosis.

Her father and brother also suffered serious injuries.

Her father, Jean-Guy Gregoire, 45, is in stable condition with massive back injuries, and her 29-year-old brother, Bruno Gregoire, is also in stable condition after undergoing plastic surgery to repair injuries to his foot and hand.

When friend Marin Athanasopoulos found Kristen, she was sit-

See BABY/page A7

Expert pessimistic about faster tornado predictions

EDMONTON (CP) — The chances of more quickly predicting storms like the July 31 tornado that killed 27 people in Edmonton are remote, says an expert heading a new study.

Keith Hage, former chairman of the Department of Meteorology at the University of Alberta, will lead a study of weather warning systems announced in Ottawa Monday by federal Environment Minister Tom McMillan.

"I don't hold out much hope for improved predictions," Hage said in an interview. "What I will focus on are the steps in between to determine what coverage we're getting."

Hage said he hopes to enter the review with as few biases as he can.

The time it took for the public to hear that a tornado had touched down south of the city has been a contentious issue. Mayor Laurence Decore has said there wasn't enough warning.

Hage is to review the weather warning system in place and to recommend improvements "which would result in earlier and more effective public warnings of dangerous weather conditions."

He said he will investigate whether predictions can be made more quickly but expects the communications network used following initial weather warnings can be most improved.

"Every minute is so important," he said, adding he will be checking Environment Canada's weather broadcast system and the roles of news wire services and other media.

Hage also has been charged with evaluating the public's understanding of potentially dangerous weather conditions and how they react to such warnings — for example, whether they tend to ignore them.

"We must learn all possible lessons from this disaster and make sure all measures that may help reduce the danger to the public are implemented," McMillan said in a statement.

The Alberta government, the city of Edmonton, Emergency Preparedness Canada, the Canadian Radio-Television and Telecommunications Commission and the Television News Directors' Association will take part in the study.

Environment Canada's Atmospheric Environment Service will join the other groups on a committee to review the final report by Hage, who has studied the history of tornadoes in Western Canada.

The investigation is to begin next week and a final report is expected by the end of October. It is to include recommendations that would apply across the country.

Hage has described the tornado as the most destructive in Alberta history in a province where an average of 16 tornadoes per year have been reported in the last four years.

He said he was approached last week to head the study and "since I'm expected to produce a report by October, I'll be busy at it full time."

A preliminary report written by Environment Canada earlier this month said the 65-minute storm was the product of unusually hot and humid weather.

The tornado's huge funnel cloud stayed on the ground from 3:01 p.m. just south of Edmonton to 4:05 p.m. when it dissipated north of the city.

Winds up to 330 kilometres per hour threw train cars off railway tracks, destroyed homes and hurled cars considerable distances. More than 250 people were injured.

St. Catharines, Ontario, Tuesday, 25 August 1987

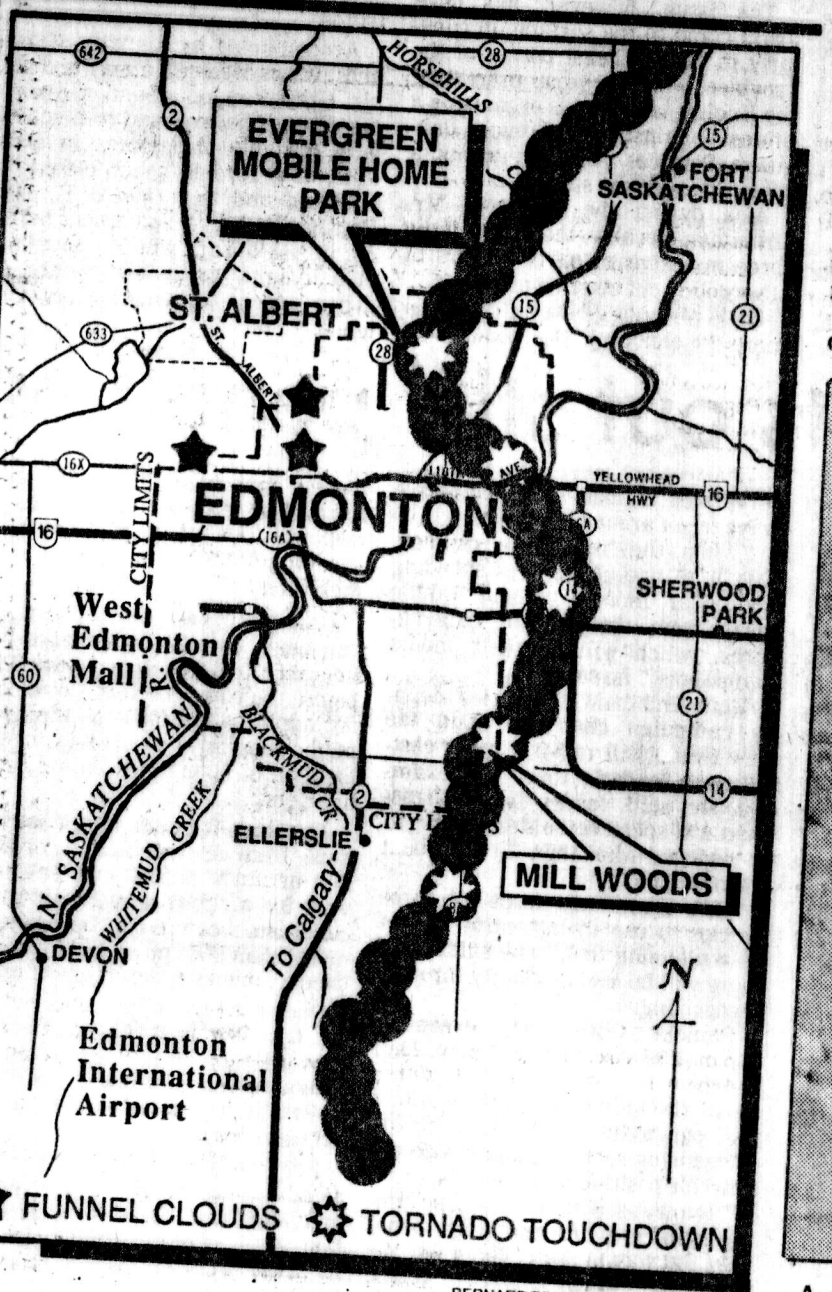
Medical examiner lists victims

Canadian Press

EDMONTON

Here is a list of people killed in the Edmonton tornados on Friday, as supplied by the Alberta chief medical examiner's office:

Jim Allan, 51.
Sharon Andruchow, 15.
Merle Bain, 50.
Marie Barker, 50.
Manuel Carreiro, 38.
George Demetrios, 19.
Edward Dery, 40.
Ajmer Dhaliwal, 30.
Lloyd Fankhanel, 55.
Richard Gillespie, 29.
Frederick Hartfeil, 34.
Daniel Lewis, 18.
To Ly, 46.
Edito Mendosa, 40.
Clement Nault, 54.
Alfred Nolin, 82.
Etta Nolin, 73.
Graham Palmer, 43.
Kelly Pancel, 18.
Mary Putnam, 59.
Diane Reimer, 13.
Darcy Reimer, 11.
Dawn Reimer, 11.
Marvin Reimer, 40.
Patricia Robinson, 30.
Gregory Trabenik, 41.



BERNARD BENNELL/The Globe and Mail

such as the ones that hit Edmonton on Friday.

With radar, meteorologists can easily identify the conditions that might spawn tornados and send out a "weather watch" to warn people that a severe storm is about to strike.

But spotting the lethal combination of temperatures and winds that will actually produce a tornado is much more difficult.

Alberta Weather Office policy is that a funnel cloud is not considered a tornado until it touches down and causes damage. No tornado warnings are issued until that happens.

In Edmonton, Mayor Laurence Decore has charged that the warning was too slow. He said the first tornado bulletin was issued at 3:07 p.m., only minutes before tornados ripped through the city.

A severe-weather watch had been issued at 1:40 p.m..

But meteorologist David Burnett defended the procedure which was followed on Friday. "The mayor is incorrect if he thinks we knew it was going to happen but didn't tell anyone because of a silly procedure preventing us from (issuing) a warning.

"The case is we don't know there's going to be a tornado until it is spotted."

A tornado was spotted in the town of Leduc south of Edmonton 12

Canada. "We
one was on t
already happ
The 1985
which killed
ed by the sam
prevailed aro
hours before t
The condit
tornado are h
levels and a r
above.
A cold fron
the warm air,
wind patterns
strong winds
upper-level je
storms start u
lently and deve
winds of up to 4
Tornados ar
Canada, where
rarely very hun
This tornado wa
has seen since
were killed in R
But last week
northern United
humid with te
above 36 degree
weather reached
atchewan.
Then a cold fr
ing with it the se
Ontario is hit h
tornados a yea
southwest. Last
only nine. In the



A security officer stands guard in the Edmonte

that used to be her home at Evergreen clutching teddy bear blanket she found.

New twisters as hard to track as bubbles in boiling water

BY HEATHER MALLICK
The Globe and Mail
with Canadian Press

Predicting a tornado is like watching a pot of water on a stove — it will boil but no one knows where the bubbles will appear.

That is how meteorologists describe the almost impossible task of tracking violently spinning thunderstorms such as the ones that hit Edmonton on Friday.

With radar, meteorologists can easily identify the conditions that might spawn tornados and send out a "weather watch" to warn people that a severe storm is about to strike.

But spotting the lethal combination of temperatures and winds that will actually produce a tornado is much more difficult.

Alberta Weather Office policy is that a funnel cloud is not considered a tornado until it touches down and causes damage. No tornado warnings are issued until that happens.

In Edmonton, Mayor Laurence Decore has charged that the warning was too slow. He said the first tornado bulletin was issued at 3:07 p.m., only minutes before tornados ripped through the city.

A severe-weather watch had been issued at 1:40 p.m..

But meteorologist David Burnett defended the procedure which was followed on Friday. "The mayor is incorrect if he thinks we knew it was going to happen but didn't tell anyone because of a silly procedure preventing us from (issuing) a warning.

"The case is we don't know there's going to be a tornado until it is spotted."

A tornado was spotted in the town of Leduc south of Edmonton 12 minutes before the warning was sent out.

A 15-minute warning is considered the best that can be expected with existing technology and Edmonton did well, meteorologists say.

"Edmonton did better than we did on the Barrie tornado," said Michael Leduc, a severe-weather meteorologist at Environment Canada. "We didn't know the Barrie one was on the ground until it had already happened."

The 1985 Barrie, Ont., tornado, which killed 12 people, was preceded by the same kind of weather that prevailed around Edmonton in the hours before the storm.

The conditions that produce a tornado are hot, humid air at low levels and a mass of cool, drier air above.

A cold front pushes underneath the warm air, creating a bubble. If wind patterns are just right, with strong winds at low levels and an upper-level jet of wind, thunderstorms start up, begin to spin violently and develop into twisters with winds of up to 400 kilometres an our.

Tornados are rare in western Canada, where it becomes hot but rarely very humid, Mr. Leduc said. This tornado was the worst the West has seen since 1912, when 36 people were killed in Regina.

But last week, the weather in the northern United States was hot and humid with temperatures going above 36 degrees and some of this weather reached Alberta and Saskatchewan.

Then a cold front arrived, bringing with it the seeds of a tornado.

Ontario is hit by an average of 25 tornados a year, mostly in the southwest. Last year, there were only nine. In the past nine years, twisters have killed 22 people in Ontario and caused half a billion dollars in damage.

Quebec gets 15 to 20 tornados a year. New Brunswick gets about five. Elsewhere in the Atlantic provinces, tornados are rare becuse of the cooling effect of the ocean.

Environment Canada has seven forecasting centres across Canada and thousands of volunteer weather watchers who call weather offices with information, including damage reports that upgrade weather watches to tornado warnings.

Philip Aber, Environment Canada's regional director for Ontario, said a plane will be sent out to film the damage pattern in Edmonton as soon as search-and-rescue teams have completed their work.

In the trailer park where most of the damage occurred, some trailers were flattened while other patches of land were untouched, Mr. Aber said.

This indicates that one tornado repeatedly touched down, although it is possible that several tornados struck on parallel tracks, he said.

The one tornado may have had four different centres or funnels and therefore may have looked like four separate tornados, Mr. Leduc said.

A tornado may only touch down for 30 minutes, he said. In that time, the tornado has to be sighted, the warning put out by wire services and the message read and transmitted by radio and television stations.

Even if people hear the warning, they still have to know that they should go to their basements, he said.

Trailers, which have no foundations, are the worst possible places to be, Mr. Leduc said. "You are so vulnerable, you are almost better outside."

force anyone to accept th
tlement offered.

"We have to consider
tional state of some p
won't ask them to accep
ment until they're ready."

One man whose hon
Evergreen Trailer Park
tened said his insurance
which he didn't identify
him "nothing could be
eight or 10 days."

Joseph Golling, who, wi
Connie was sorting throu
clothing yesterday, saic
received no offer of i
cash.

"The shock was so gr
what happened I didn't rea
might have been able t
money," Mr. Golling said.

Mr. Wood said the fi
claims for tornado dam
already been settled a
homeowners who need e
money can get it under s
cies. That type of policy v
er expenses ranging from
cy hotel bills to kennels
pets until the homeless
homes.

People of Bar helping ou

The Globe and Mail

The people of Barrie,
who experienced deadl
nados two years ago,
pulled together once ag
this time to help the to
victims in Edmonton.

Joe Drouin and Doug I
used the occasion of the
rie's three-day summer
val, Kempenfest, to
money for the Edmonto
tims. So far, they have co
ed $1,400.

Mr. Drouin, a St.
Ambulance superinten
was one of the first to
the scene of destructio
Barrie left by a tornado
ripped through the are
May 31, 1985, killing 12 pe

"People have been
generous," he said.



TRAVEL

A LITERARY PILGRIMAGE
Where to go to get the images of literature

INSIGHT

BLACKOUT!
Why has there been such secrecy on the refugees?

ENTERTAINMENT



MURDER FOR FUN!
How murder-mystery evenings have become hot items

WHEELS

LICENCE PLATE CENSOR
What you can't get away with on your car

LIFE



The marrying urge
Why baby boomers are flocking to the altar

SPORTS

THE VANISHING PITCHER
Where have all the full-game throwers gone?

Metro Weather
Sunny. High 25C.
Details, A2
Car lights on 8.12 p.m. and off 6.38 a.m.

THE SATURDAY STAR

August 1, 1987
$1.00
The Toronto Star Established 1892
June/87 Saturday paid circulation 784,236

Hundreds hurt in destruction 'worse than war'

Edmonton tornadoes kill 30

EDMONTON (CP) — At least 30 people were killed and hundreds were injured when tornadoes sliced a path of destruction through the eastern part of Edmonton yesterday.

Fleets of ambulances ferried the injured to hospitals through debris-clogged streets. It was feared many were still buried in the wreckage.

Funnel clouds touched down repeatedly and left a trail of destruction and debris behind that looked "worse than war," one witness said. The raging winds smashed buildings, tossed cars around like toys and uprooted trees.

☐ Dramatic photo of tornado/A3

Edmonton Mayor Laurence Decore declared a state of emergency. Damage was estimated in the millions.

One man said he saw trucks and houses flying across a street as he drove home from work to the suburb of Millwoods on the city's southeast flank.

Dale Campbell said he helped several badly injured people to ambulances.

Decore said 27 people died in the city itself and Jocelyn Tennison, spokesman for the County of Strathcona, just south and east of the city, said three are confirmed dead there.

Decore said 24 of the Edmonton deaths occurred in a trailer court flattened by the twisters. Tennison said 150 people were injured in Strathcona.

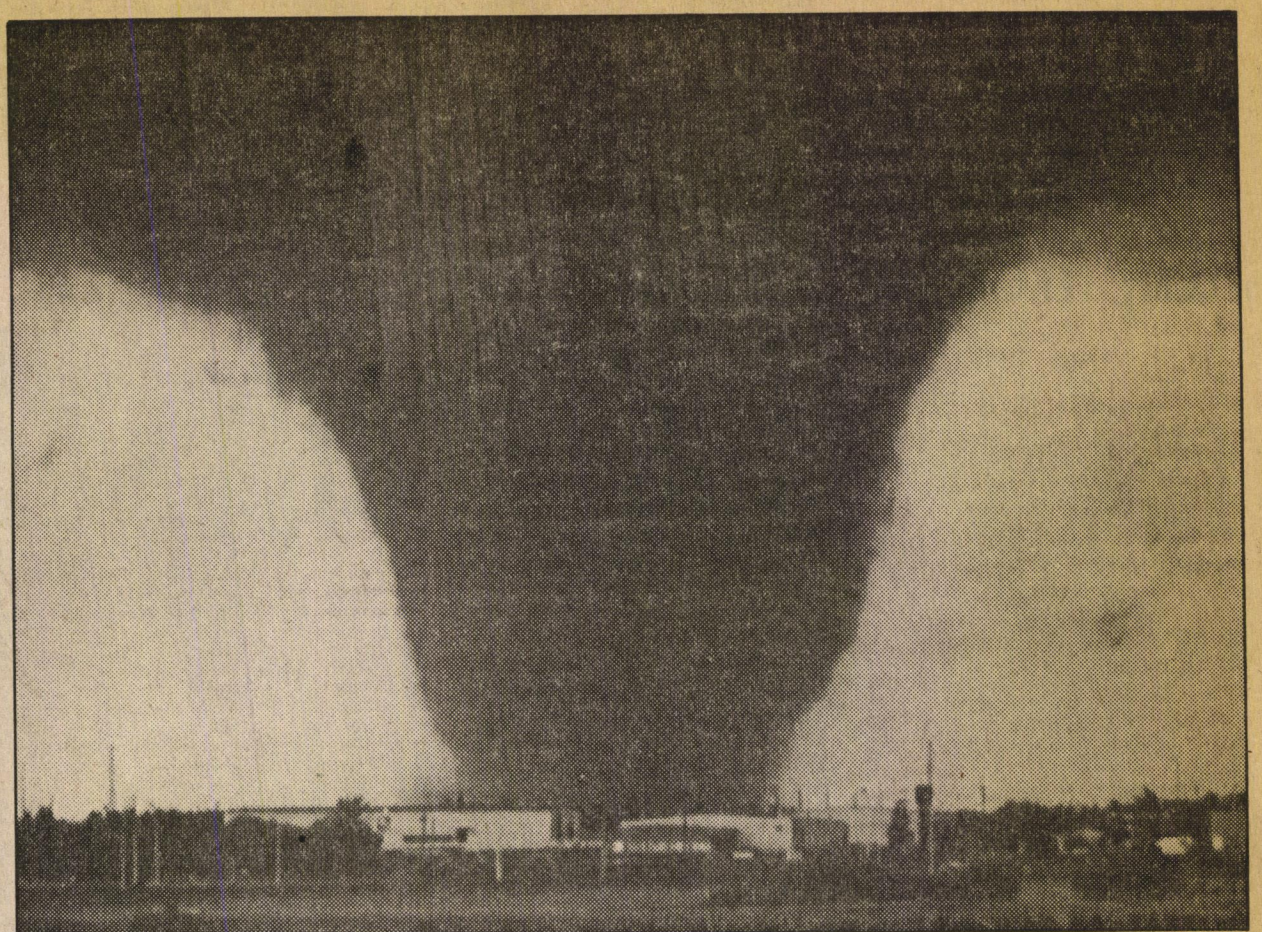
The tornadoes tossed cars around on expressways swelled by motorists heading out of the city for the holiday long weekend.

Witnesses said badly mangled bodies littered the roads.

Keith Cox, a reporter who reached the scene after the storm passed, described destruction "as far as the eye can see."

"Debris is strewn everywhere," he said. "Trees are tossed. There are buildings where a wall has caved in and a roof has

See DOZENS/page A3



CP PHOTO

Deadly twister: A huge tornado rips a kilometre-wide swath through east Edmonton yesterday, leaving dozens of people dead and hundreds more injured. Funnel clouds touched down repeatedly, smashing buildings, tossing cars around like toys and uprooting trees. A trailer park was flattened.

Dozens are killed, hundreds injured as tornadoes rip through Edmonton

Continued from page A1

collapsed on top of it.

"There are buildings that have been struck by fire because the gas mains have blown.

"It's in the middle of an industrial district, and it looks like hell."

A resident on the outskirts of the stricken area said she saw cars flipped on their roofs and burned out. "The only way you could tell they were cars was that their wheels were sticking up."

Tom Harding, another area resident, said the storm hit with a deafening roar.

He said the destruction is "worse than war."

All Edmonton police and fire crews were called into emergency service and all hospitals were placed on full alert.

Repair crews cut off gas mains leading into the worst-hit areas.

Initial rescue efforts were hampered by repeated thunder squalls which swept over the city like breaking waves. The downpour flooded underpasses throughout the city, leaving cars marooned. Mountainous black clouds streaked with jagged blts of lightning loomed over the city.

The winds blasted at least a dozen cars from a stationary CN Rail freight train on a siding in the Refinery Row area in the eastern part of the city.

Two yardmen who sought shelter in a boxcar in a nearby railyard as the tornado approached were injured when the car blew over.

A CN switch-manufacturing plant in the area was demolished, but the 35 workers in the plant got out safely.

The Esso refinery in east Edmonton was damaged, but officials said there were no leaks of fuel.

Rescue workers mobilized cranes and bulldozers to clear wreckage as they searched for trapped victims.

The tornadoes hit in the midst of a vicious storm which flailed the city with high winds, torrential rain and rattling hailstones.

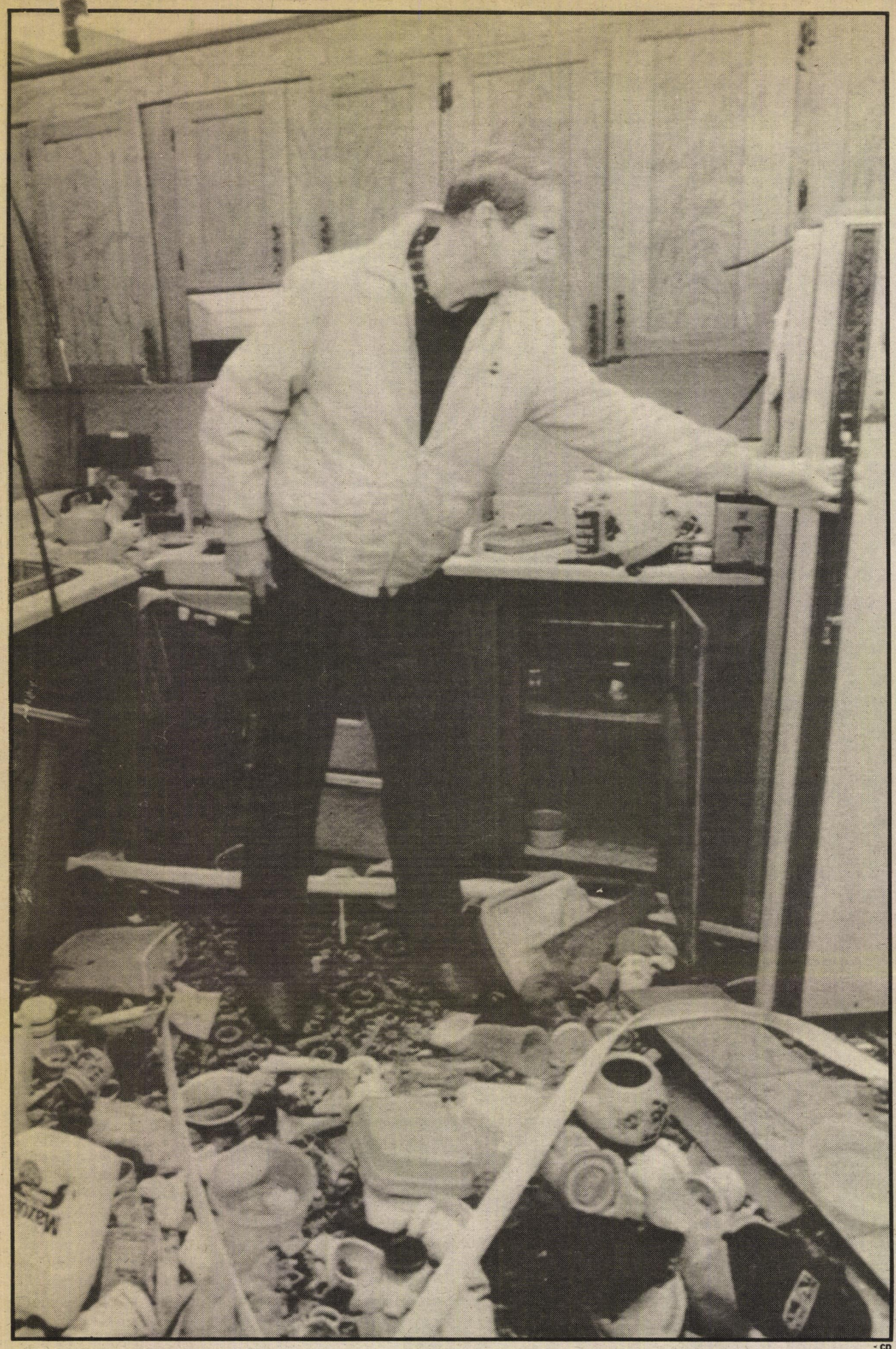
The city telephone system was in chaos, clogged by frantic calls.

In northeast Edmonton, stores in a shopping mall were closed and employees and shoppers were shepherded to safety in the basement. They stayed there until the final storm system blew through the area.

Informer denies luring d into drug deal

court was told, and the informer ed some of Iati's money to buy a because he knew there was a oney coming to him.

eybrook Crescent, and 6 of Eighth St. both ave pleaded not of conspiring nd to traf- January,



- cp

GETTY GETS A FIRST-HAND LOOK

Alberta Premier Don Getty checks the damage at a mobile home in Edmonton's Evergreen trailer park yesterday. Killer tornadoes that touched down in the park Friday ripped off the roof of the home, but left the kitchen intact. Some of the glassware was still in the cupboards. At least 13 people died in the park.

Babies survive twister horror

Stories by Kerry Diotte, Brett Harris, Mindelle Jacobs, Timothy LeRiche, Frank MacKay, Gary Poignant, Tony Saloway and Richard Watts, Edmonton Sun.

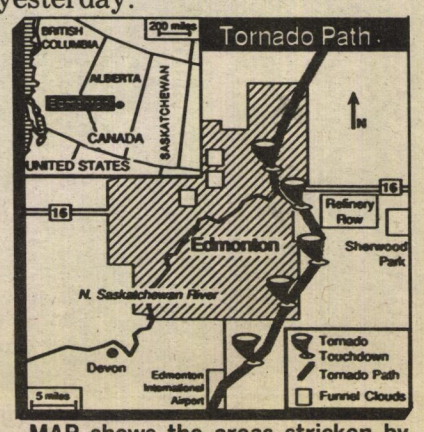
EDMONTON — Two babies have been discovered miraculously almost unscathed in the shambles of tornado-ravaged Edmonton.

A third infant, massively battered after being hurled hundreds of yards through the air by the Friday twister, was clinging to life last night.

Little Tyler Chrisp joined his mother, Wendy, 23, at Royal Alexandra Hospital just after midnight yesterday.

Tyler was found by rescuers on a road near the Evergreen Mobile Home Park, more than 300 metres from the trailer from which he was torn.

Evergreen was the hardest hit location in Edmonton with 14 dead amid an obliterated 200 mobile homes.



MAP shows the areas stricken by tornadoes in Edmonton Friday.

"Tyler is in very, very bad condition," said his grandmother Irene Crisp. "He is barely hanging on. His skull is badly fractured."

His mother, who ran out of the rubble in such a state of shock she believed she was carrying her baby, is also in critical condition with internal injuries, a broken back, a collapsed lung and a broken leg.

Bruised and battered Mary Grandish was beaming in hospital yesterday with her "miracle baby".

Amazing Cody Grandish, 3½ months, escaped with a slightly fractured skull after he was torn out of his crib and hurled through two bedrooms.

"He's my little miracle baby. I simply can't believe he lived through this," said Grandish, 27, who dug frantically through the debris of her home to find her son.

Mary rushed her baby to Royal Alexandra Hospital where both were receiving treatment yesterday.

"I feel like the luckiest mom in the world. We're so fortunate. We may have lost our house, but we still have our lives."

Police spokesman Lance Beswick said another baby was found when "one of our officers was picking his way through the ruins when he heard a cry at his feet."

The baby is in satisfactory condition in hospital.

Chinese 'sister' hit by twister

EDMONTON — In a cruel twist of fate Alberta's sister province in China has been hit by a killer tornado.

The twister swept through Heilongjiang killing 16 people, seriously injuring 442 and leaving 13 others missing at the same time a twister was wreaking havoc in Edmonton.

The official Xinhua news agency said the tornado, accompanied by heavy rain, struck 14 towns in Hailun, Baiquan and Nehe counties in Heilongjiang province Friday afternoon.

Destroyed in the storms were 1,800 houses and 40 km (24 miles) of power and communication lines, it said.

Storms and widespread flooding has left almost 600 people dead in China this year.

Doctor IDs 16 of 25 killed

EDMONTON — Alberta's chief medical examiner has positively identified 16 of the 25 people declared dead in the aftermath of Edmonton's tornadoes.

Nine others haven't been identified. Three are children.

The following are names of dead recovered from the Evergreen Trailer Park:

Sharon Andruchow, 15, **Merle Bain**, 50, **Marie Barker**, 50, **Lloyd Fankhanel**, 55, **Fred Nolin**, 82, and his wife Etta, 73, **Kelly Pancel**, 18, and **Mary Putnam**, 59.

Those found in the southeast industrial area are:

George Demetrios, 19, **Ajmer Dhaliwal**, 30, **Richard Gillespie**, 29, **Daniel Lewis**, 18, **Edito Mendosa**, 40, **Clement Nault**, 54, **Graham Palmer**, 43 and **Gregory Trabenik**, 41.

The remaining dead were so badly mauled they may have to be identified with dental or hospital records.

EDMONTON'S KILLER TWISTER: THE DAY AFTER



- edmonton sun photo

AN Edmonton homeowner picks forlornly through what's left of his house after tornadoes ripped through the Alberta city Friday afternoon.

TERROR WON'T DIE

By CLAIRE BICKLEY
Toronto Sun

Chilling deja vu was felt yesterday by Central Ontario residents who were themselves survivors of a killer tornado two years ago.

Recalling the financial hardships they endured in its aftermath, Barrie residents interrupted the Kempenfest summer festival with an impromptu fund-raising drive for the Edmonton victims.

"We were watching it on TV (Friday) night and my wife just started to cry. She said, 'No, no, it can't be happening again!' It brought back unbelievable memories," said Edward Tomes, whose home was destroyed by the May 31, 1985 twister.

That storm claimed 12 lives in Barrie, Grand Valley, and Tottenham. The $100-million damage also struck Orangeville.

The Tomes were victimized a second time, ironically by an Edmonton contractor, who accepted their $40,000 deposit and left town without completing repairs.

Embittered by that experience, Tomes said he wants to warn the Edmonton victims to beware of fly-by-night contractors who ask for large upfront deposits — especially until their early shock wears off.

The Tomes family spent 13 months living at Canadian Forces Base Borden before their house was finally rebuilt. They and three other families are still embroiled in a civil suit against the contractor.

"This is a grim reminder. It's made us feel very low and glum," Tomes said.

He suggested that Ontario send a team of advisers to Edmonton to share their experience in dealing with the aftermath.

"It makes you feel funny in your tummy. I felt like crying. It's hard to take," said Viola Patterson, who recalled storm-tossed furniture flying overhead in her family's Orangeville store.

"I feel we'll probably send some money out to Edmonton as soon as we find out how it's going to be handled," Patterson said.

Barrie TV and radio stations were co-ordinating contributions to a relief fund for Edmonton residents.

Barrie Mayor Ross Archer said he will write to Edmonton Mayor Laurence Decore to express his sympathy and empathy with that city's suffering.

"It's a devastating thing to happen to any municipality. It's one of those things you never want to go through," said Archer.

The tornado's emotional legacy lingers on although more than two years have passed, Archer said.

"I think every time storm clouds gather people are edgy. Children say, 'Mommy, are we going to have another tornado?' No, it's not forgotten here and I don't think it will be for many years," he said.

Lines jammed

Jammed telephone circuits in Edmonton added frustration to the worry of Ontarians seeking information on friends and relatives in the disaster-stricken city.

The Metro Central Red Cross quickly set up a telephone hotline (960-3175) here.

The volume of calls into Edmonton yesterday made it impossible for concerned people like Karen Simoneau of Guelph to find her best friends.

Kerry and Marianne Miller, who are in their early 30s, and their two young daughters live in the Evergreen Mobile Home Park where 350 of 600 trailers were reported damaged or destroyed.

Simoneau, who moved from Edmonton in May, was also unable to find out whether a home she still owns about five minutes' drive from the trailer park was damaged.

"The main thing is our close friends. They're some of our best friends. My husband went to school with Kerry. We're just praying they're all right," Simoneau said.

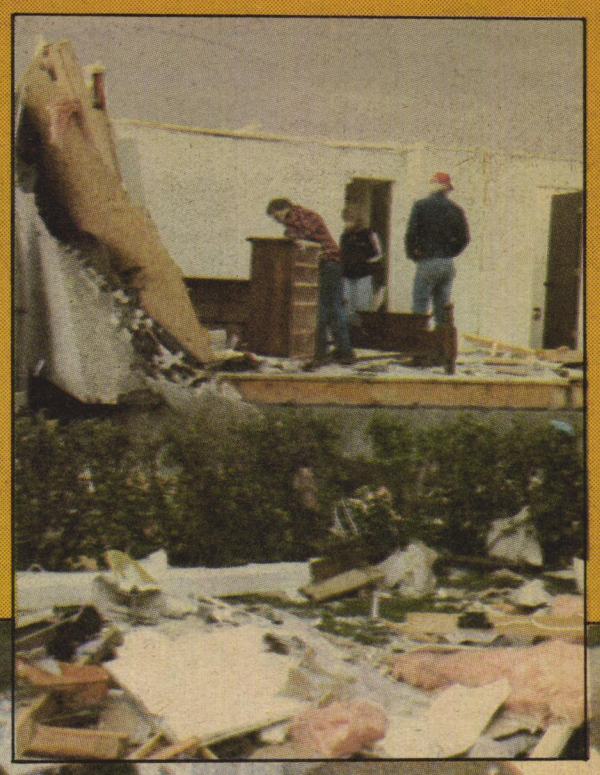
Donna Endicott, executive director of the Red Cross's Central Toronto branch, said phones there were ringing constantly yesterday.

With the help of the Canadian Radio Relay League, an organization of amateur ham radio operators, the Red Cross was trying to get information on the dead and injured.

Gordon Fraser, emergency co-ordinator of the league in Metro, said about a dozen volunteer operators will work throughout the long weekend.

— bickley







- paul wodehouse, edmonton sun

Edmonton's killer twister: The day after

NATURE'S FURY



Agony

Rescue workers carry a man off on a stretcher in the aftermath of the killer twister that hit Edmonton Friday. Opposite, aerial view taken yesterday shows the extent of the destruction. Inset, residents attempt to salvage what little is left of their belongings.

- larry wong, edmonto

EDMONTON'S KILLER TWISTER: THE DAY AFTER

Grim hunt for bodies

From the Edmonton Sun

EDMONTON — Workers continued the grim task of searching for bodies yesterday, sifting through the devastation caused by a series of tornadoes that killed 25 people and injured hundreds.

Three of the dead are children.

Hundreds of people will be jobless as the tornadoes ripped apart a major industrial area.

Two people were charged yesterday with looting a levelled trailer park where at least 13 people died.

Earlier official reports placed the Friday evening death toll at 34 but Edmonton Mayor Laurence Decore said there "was a duplication of reporting" by medical and ambulance personnel.

Early estimates say damage will exceed $50 million.

Prime Minister Brian Mulroney pledged the federal government will do whatever it can to help the survivors.

Mulroney said Canadians feel "shock, grief and sadness" at the tragedy.

A sombre Premier Don Getty, who toured the scenes of destruction with his wife, Margaret, also promised financial support from the Alberta government.

"I've never seen anything like this before," said Getty.

The Queen also sent a message of condolence.

As many as six twisters swept into the city at the peak of rush-hour traffic, carving wide paths of destruction in about seven places in and around the city.

"Last night was the worst tragedy in memory for the city of Edmonton," Decore said.

Witnesses said the tornadoes twisted steel beams "like licorice" and tossed cars hundreds of yards.

Several people were killed in an industrial area in the southeast part of the city where two trains were derailed and dozens of trucks were thrown hundreds of feet. Ten large warehouses, one six stories tall, were levelled and cars were tossed from a nearby freeway, trapping drivers inside.

Additional victims were reported killed in suburban areas to the south of the city. Dozens of farms and homes were destroyed.

Police cordoned off the main areas of destruction to prevent looting.

Area hospitals reported treating more than 200 people, although officials said the numbers without major injuries was impossible to count.

An estimated 278 people were injured at the Evergreen Mobile Home Park where at least 13 people were killed and 200 vehicles destroyed. Eight of the injured were in critical or serious condition.

Some highways and roads, flooded during the storm, remained closed yesterday.

The mayor complained weather officials were slow in issuing the tornado alert. The first alert came about an hour before the tornadoes struck.

- **Color photos: Pages 48-49**
- **Phone lines jammed: Page 50**
- **Dial Metro hotline (960-3175) for word on loved ones.**
- **Babies survive: Page 51**

How you can help

Sun readers in Ontario and Alberta have opened their hearts to the people devastated by the Edmonton tornadoes.

And *Sun* newspapers in Toronto, Edmonton and Calgary have set up a relief fund to help our troubled Western neighbors.

Toronto *Sun* publisher Paul Godfrey yesterday urged readers to give generously.

"Torontonians have always opened up their hearts and wallets, whether for their own or for other countries," he said. "And they should remember that not too long ago a tornado of similar strength passed through Barrie, awfully close to home."

All money donated will be given to the Red Cross, which is spearheading Edmonton's relief efforts.

The *Sun*'s U.S. sister newspaper, The Houston *Post*, is also reporting on the fund for any Houstonians who want to donate.

Make cheques or money orders — no cash, please — payable to "The Edmonton Tornado Fund" and send to: **The Edmonton Tornado Fund, c/o the Toronto *Sun*, 333 King St. E., Toronto, Ont. M5A 3X5.**



- peter martin, edmonton sun

RED DEER musician Jim Morrison holds a damaged guitar in front of the wreckage of his van which was destroyed by tornadoes in Edmonton.

All a matter of cruel chance

By GRAHAM HICKS
Edmonton Sun

It was as if an angry god had stepped down from the sky, planted one giant foot in the middle of Evergreen Mobile Home Park, and continued on his way.

Hours after the tornado had hit, nature, in the cruellest of moods, was pretending nothing had happened.

The sun was shining.

Buildings undamaged

Buildings and trees on nearby roads showed no damage.

Even on Evergreen's western outskirts, damage was minimal.

And then, at the park's entrance, the devastation.

To the left, trailers still stood, albeit damaged.

To the right, the world had been levelled. Nothing could be seen but a tangled mess of pink insulation, battered furniture and smashed cars.

Rescue workers and survivors picked through the rubble left by a tornado that killed at least 13 park residents and destroyed 200 homes and vehicles.

Delilah Bodman, 23, wandered through the mud. She spoke of the tornado like a living creature. "It knew where it was going," the survivor said. "It knew its business. It knew what it was going to do."

She had found her cat Pebbles hiding in the remains of a doghouse. Kitty in her arms, she searched for her fiancee and young son. They would turn up later, safe.

Her home had been damaged, not destroyed.

Bodman was half a block away in her car when the tornado struck.

"At first, it was the wind. And rain like you wouldn't believe. Then one long streak of blackness and wind, just a'giving her. I didn't see a funnel. All I saw was black and the wind."

Police estimate damage to the park at $10-million.

Resident Mark Ernewein, 23, stands amid the wreckage, clutching a small portable stereo and an 'I Love Edmonton' sticker — the only two possessions he had been able to find.

"I came here today and all I saw was an empty lot," says Ernewein. "These are the only things I've found.

"I had a Chevy truck and a Dodge Dart there too but they're gone too. I haven't found them yet."

Ernewein and his pregnant wife had left the park just one hour before the storm.

"It would have been impossible to survive this," he says.

Florence Brenneis pauses in her search for an injured friend's belongings.

She'd been in the tornado's eye.

The Brenneises operate a vegetable farm on 30 acres just south of Evergreen.

"We saw the twister coming, but we thought it was heading the other way," Brenneis says. "Suddenly it changed direction.

"The trees started snapping, the trucks were being shifted. I yelled, "run for the roothouse."

"We made it. We got to the roothouse. I don't know how. The doors blew open. We grabbed onto each other. I opened my eyes. The roof began to fly up. I panicked. I yelled. We all yelled. We held onto each other for dear life."

Husband's safe

Florence's husband, Richard, had been in the farm's garage with another employee. They found him, blown across a field, across a stand of trees. "He may have lost his finger, but he's okay," Florence says. "The employee was seriously injured."

The garage, greenhouses, half their home, four trucks, and several acres of crops are destroyed. "Right now, I don't care," says Florence. "We're alive."

Sunday SUN

TORONTO, Aug. 2, 1987
252 pages, 7 sections
Vol. 14, No. 45 ●●●
June Paid Circulation 445,001
2nd. Class Mail Reg. No 3204

$1



paul henry, sun
BOB RAE gives a Caribana 'five'

Politicians on parade!

Peterson wants bigger cabinet
Pages 4 and 24

No paper Monday

SPORTS

Jays draw a blank

- Page 79 -

★ ★ ★

Tyson IS champ

- Page 83 -

THE DAY AFTER

- edmonton sun photo

Residents clamber yesterday over the rubble of an Edmonton townhouse sheared from its damaged neighbor by the tornadoes Friday that devastated parts of the city and killed 25 people, including three children. Hundreds were injured and damage is estimated at $50 million.

Edmonton tornadoes death toll at 25: Pages 5, 48 to 51

Saturday PEOPLE



One of Italy's top gov't figures

ILONA STALLER, an Italian MP and porn star who is better known as Cicciolina (Little Fleshy One), lived up to her reputation yesterday when she arrived at Athens airport: The 37-year-old Hungarian-born blonde, a member of the Italian Radical party, exposed her breasts to an enthusiastic Greek press. The newly elected parliamentarian is on a private visit to Greece to celebrate the third anniversary of a Greek movie company.

Kate Smith gets final resting place

RALEIGH, N.C. (UPI) — More than a year after her death, singer Kate Smith will be entombed in a pink, granite mausoleum that church officials initially rejected as too ornate, executors of her will said yesterday.

Officials at St. Agnes Catholic Church in Lake Placid, N.Y., where Smith spent many of her summers, relented Thursday and said construction of the mausoleum can proceed.

Large headstones and other elaborate memorials have not been permitted in the church cemetery in the past, but the woman who made *God Bless America* a second national anthem requested she be entombed there and that her mausoleum be of pink granite.



KATE SMITH
Pink mausoleum

Her final resting place will have a bronze door with a stained glass window and crosses, and a ring of flowers will be carved into the rose-colored granite. Her name will be emblazoned over the door.

Helena Steene, Smith's sister, said the church's decision "will make everything peaceful again.

"It pleases me because we've had such a long fight."

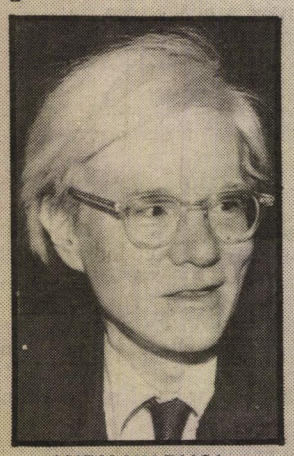
Smith moved to Raleigh to live with her sister when her health began to fail in 1979. She died of a respiratory ailment June 17, 1986, at the age of 79. Her body has been stored in a vault in the Adirondack Mountains since then.

Of her $500,000 estate, Smith left $25,000 to St. Agnes Church, $25,000 to the Catholic Uihlein Mercy Centre and $5,000 to Lake Placid Memorial Hospital.

Medics cleared in death of Warhol

NEW YORK (UPI) — A prosecutor said yesterday he won't press charges against doctors and nurses who treated pop artist Andy Warhol before he died following gall bladder surgery in February.

"There is insufficient evidence of criminal liability," said Manhattan district attorney Robert Morgenthau.



ANDY WARHOL
Routine operation

Warhol died in New York Hospital on Feb. 20 while recovering from the routine gall bladder operation.

An autopsy showed that the pop artist's heart began to fail a significant time before it was reported to doctors, prompting medical examiner Elliot Gross to call for a criminal investiation to determine how Warhol was being treated in the hours before and after the operation.

As for the private duty nurse assigned to Warhol whose actions came under fire from the state health department, Morgenthau said it was impossible to determine "whether more careful and vigilant nursing care would have detected the fatal arrhythmia in time to have prevented Warhol's death."

We bet Elizabeth was not amused

LONDON (UPI) — Members of the royal family had their share of trouble with transportation this week.

The Queen made a ceremonial opening run Thursday on a new high-tech, driverless railway and everything went wrong.

The computer-controlled train carrying the Queen and her posse of dignitaries ground to a halt after 400 metres and refused to budge. Minutes ticked by while embarrassed officials located an engineer to drive the train to the $123-million control centre of the Docklands Light Railway.

Then the Queen walked to the door to leave the train but the door refused to open. Her majesty stood there fuming for two minutes before the computer finally let her out.

That same day, the Queen Mother was leaving a church concert when her limo collided with one of her own security vehicles. No one was hurt.

Let's hope Andrew and Fergie have better luck on their canoe trip in Canada's North.



THE QUEEN
High-tech letdown

Seafarer returns to T.O.

Former Global TV financial reporter Raoul Engel was in town to visit his old buddies with wife Mary. The Nassau-based sailor exchanged sea tales and talked money with Alexander and Minette Ross, Bill Cunningham and Ottawa reporter Peter and Eleanor Trueman.

•••

The Association of National Tourist Office Representatives must have great connections. For the fifth year their annual luncheon at the Royal Canadian Yacht Club had the clearest, sunniest day. The city's skyline was majestic from the other side of the lake. Passing on travel tips over drinks on the veranda and buffet lunch were Jean Francois Oudin (French Tourist Office), Abraham Drori (Israel Tourist Office) Eleni Eleadis (Greece), Shahir Naqvi (India), prize-winning journalist Glen Warren, writer Hubert de Santana and the *Sun*'s own Percy Rowe, Jill Rigby and Jane Stokes.

•••

Here's to the ladies that lunch. And there were 30 who came to bid auf wiedersehen to fellow committee member of the Canadian Opera Women's Committee, Elizabeth Niesslein. She and banker husband Frank leave our fair city for a new posting in Frankfurt. Wellwishers and friends included Carol Ko, Angelica Lawson, Gretchen McDowell, Sonja Evans and Blanche Carraher. A very appropriate gift was given: a polar bear carved in a heavy piece of crystal.



ELIZABETH NIESSLEIN
Super sendoff

•••

It was just one of those days. First David Nugent's Jag wouldn't start, so he and Catherine and fellow sailors hopped into a cab. After unloading their feast and equipment for the sunny day sail, poor David turned the key of the motor and the battery was dead. However a lovely time was had by all tied up at the slip sipping this and that. The evening ended with David inviting the guests to a repast at Cibo's. And a good choice too since owners Tony and Roberto sent over one of their best bottles of champagne to welcome the newlyweds back.

•••

They don't make grand entrances the way they used to. But actor Craig Russell is certainly making an attempt to bring it back. When he couldn't get the front gate of Toller Cranston's unlocked, he and his two dogs crawled over the back wrought-iron fence. Finally in, dinner was served on the floor to the guests while Toller's two hounds and Craig's canines were contently stretched out on the silk sofa.

•••

Sun columnist Eric Margolis found out that being a genetleman doesn't always get the best results. Recently at a garden party, as the sun went down, so did the temp, and gallant Eric (that however is not what they call him down here) lent his sparkling white Italian linen jacket to a chilly damsel. As far as E.M. is concerned she could freeze in h— since she had the "gutzpah" to return it in the most crushed condition and didn't even offer to iron the wrinkled topper.

through Edmonton



- paul wodehouse, edmonton sun

Trailer park flattened

An aerial view shows the destruction at a trailer park where 24 people died when tornadoes hit yesterday. Dozens of injured from the Evergreen Mobile Home Park were taken out by air ambulance. At least 30 people are dead and hundreds injured. Others may be trapped in vehicles and collapsed buildings.

Twister's cruel path



- cp

SURVIVOR PULLED FROM RUBBLE

EMERGENCY CREWS carry one victim of yesterday's tornadoes from the wreckage of an Edmonton house shortly after the storms passed. At least six tornadoes struck without warning during the afternoon rush hour, demolishing houses, flipping cars like toys and uprooting trees. Fist-sized hail pelted the Alberta capital and suburbs. Some victims were believed still trapped in the rubble of buildings, and by early today the death toll was still rising.

'IT WAS LIKE HELL'

An industrial park in Edmonton, one of the areas hardest hit by yesterday's tornadoes, is strewn with overturned cars and rubble. Gordon Lechelt saw one of the tornadoes approach a tool shop. "We went outside to watch it and it got bigger and we all ran back into the shop," he said. "Suddenly it was as if we were in the middle of hell. The cement walls were sucked out in seconds and rubble covered all 20 of us." Lechelt was lucky to survive — some of his companions did not.



- cp

TORNADOES KILL 30 IN EDMONTON 'HELL'

EDMONTON (CP-Special) — At least six tornadoes whipped through Edmonton and its suburbs yesterday, killing at least 30 people and injuring hundreds of others.

Mayor Laurence Decore said 27 people died in the city. Jocelyn Tennison, spokesman for the County of Strathcona, just south and east of the city, said three are confirmed dead there.

Decore said 24 of the Edmonton deaths occurred in the Evergreen Mobile Home Park, which was flattened by the twisters. Dozens of injured from the trailer park were taken out by air ambulance.

At least 100 people were taken to Edmonton hospitals by a fleet of ambulances that struggled through debris-clogged streets. It was feared people were also trapped in the wreckage or in crushed vehicles.

Tennison said 150 people were injured in Strathcona.

Edmonton and Strathcona officials declared a state of emergency.

Damage was expected to run into the millions.

An Environment Canada weather forecaster said at least six tornadoes touched down during the hour-long storm, sweeping down on the city from the Rocky Mountain foothills to the west at about 4 p.m. (6 p.m. EDT).

An environment spokesman said the winds, still "packing a lot of oomph", were heading toward Saskatchewan and Manitoba.

A resident on the outskirts of the stricken area said she saw cars flipped on their roofs and burned out. "The only way you could tell they were cars was that their wheels were sticking up."

Reporter Keith Cox said there was destruction "as far as the eye can see."

"Trees are tossed. There are buildings where a wall has caved in and a roof has collapsed on top of it.

"There are buildings that have been struck by fire because the gas mains have blown.

"It's in the middle of an industrial district, and it looks like hell."

Dale Campbell, who was returning to his suburban home, said he saw "houses flying, trucks flying. I got out of the truck to help and I was thrown 30 feet across a field. When I got up I helped pick up injured people with hardly any faces left and took them out to ambulances on the freeway."

Rescue workers mobilized cranes and bulldozers to clear wreckage as they hunted victims.

National Red Cross spokesman Pia Tallieu said western Canada branches were on alert.

The city telephone system was in chaos, clogged by frantic calls.

All police and fire crews were called into emergency service and all hospitals were placed on full alert.

Repair crews cut off gas mains leading into the worst-hit areas.

Initial rescue efforts were hampered by repeated thunder squalls sweeping over the city.

Police were blocking underpasses as a deluge of water from clogged storm sewers rushed down streets. They were also monitoring several fires.

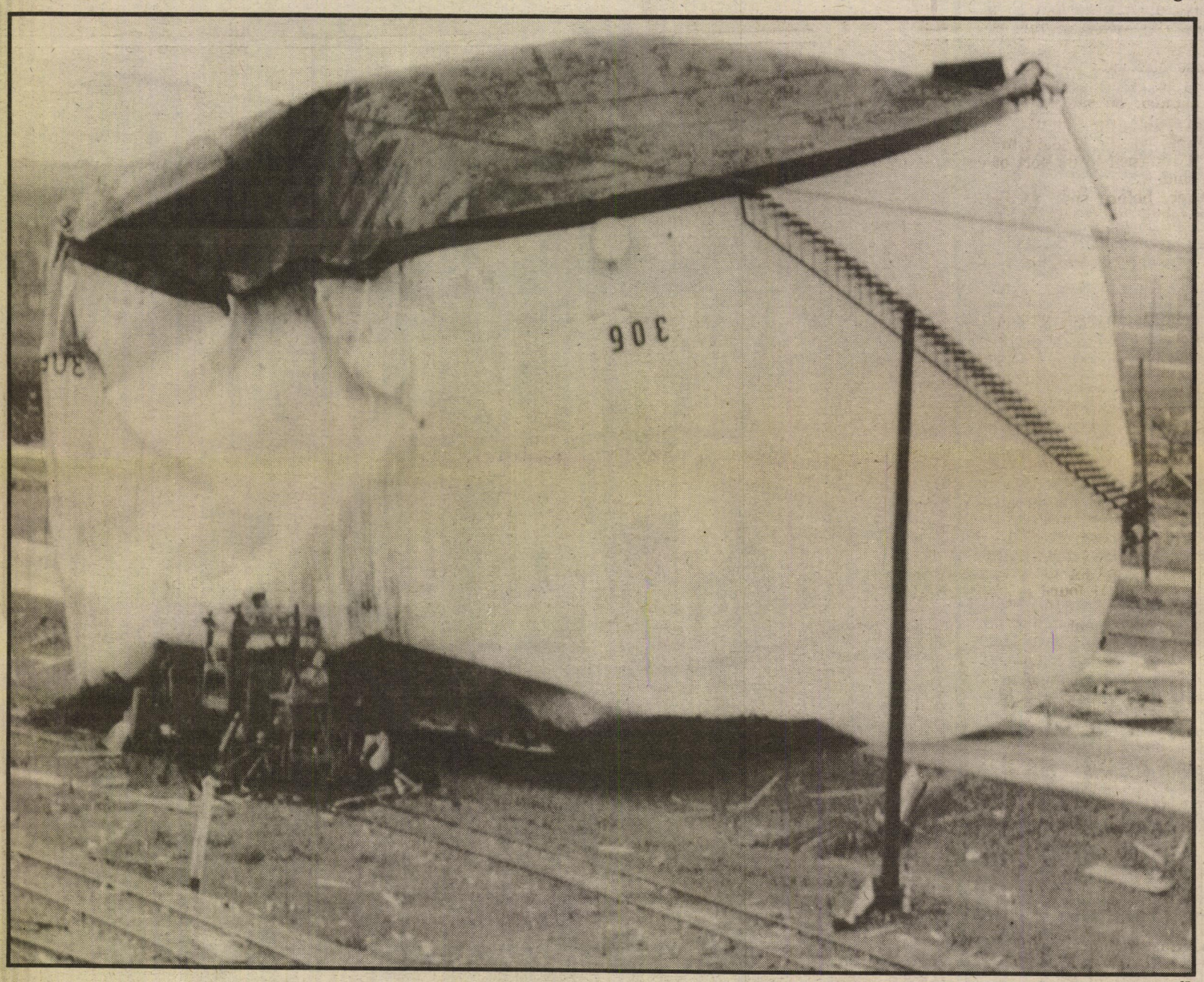
A woman in Beaumont said her neighbor lost everything in her yard.

The woman said her friend was sitting in her home when she realized all the vehicles in her yard — including several cars, a mobile home and a motorcycle — had disappeared.

"Gone with the wind," said the Beaumont resident.

Toronto area residents with relatives in the area can call Edmonton Red Cross at 403-423-2680.

● Photos: Pages 34-35



THIS HUGE oil tank was blown about 300 metres onto railway tracks, testifying to the awesome power of the tornadoes that ravaged the Edmonton area during the afternoon rush hour yesterday. At least 30 people were killed and hundreds injured. - cp

'Everyone is still stunned'

By MARK STEWART
Toronto Sun

Edmonton *Sun* columnist Graham Hicks toured the twister-torn section of the Alberta capital last night and felt "a sense of World War II in London".

"I think everyone is still stunned. Tornadoes don't happen here," said Hicks.

He spoke with several families whose homes were shattered but who escaped with their lives.

Mary Grandish and her three-month-old son Cody were at home when a friend ran to the door yelling, "Look what's coming!" As Grandish opened the door the tornado hit and the house crumbled around them.

"The friend was able to pull her out and they started yelling for Cody. The friend saw the baby's legs sticking out from a pile of wood and managed to pull him out," Hicks said.

Grandish suffered facial cuts but Cody was uninjured.

"Another minor miracle" happened to Jane Marks and her daughter Sherri, Hicks said. "Their house was levelled but for the kitchen area. They happened to be in the kitchen and the refrigerator managed to stop the wall from collapsing on them.

"Her husband Henry arrived just as the fire department was getting them out. Again, neither was seriously hurt," Hicks said.

A working couple went home after hearing radio reports about their neighborhood being devastated.

Gale Heatherington told Hicks, "I knew our house had been hit. I had a premonition."

"When they arrived all that was left standing was the toilet," Hicks said.

He found Jeannette Kucher, her son Sean, 3½, and their in-laws in their battered home. The family had escaped the tornado's fury by seconds and were nearly trapped in the basement as torrential rains flooded through the main floor.

"It was as if some really rowdy bandits had been through and trashed the place. All the windows were blown out," he said. "The upstairs was untouched. The main floor was trashed."

Hicks was talking with bus driver Larry Tomlinson and his wife Leila when the wind picked up again. As they hurried to the basement, the phone rang.

It was Tomlinson's brother Bill. "The first words he said were, 'Are you busy this weekend Bill?' It took several of us to convince him that we were sitting in a bombed-out basement," Hicks said.

Ontario goes to the polls Sept. 10: Pages 3, 24

the Saturday SUN 25¢

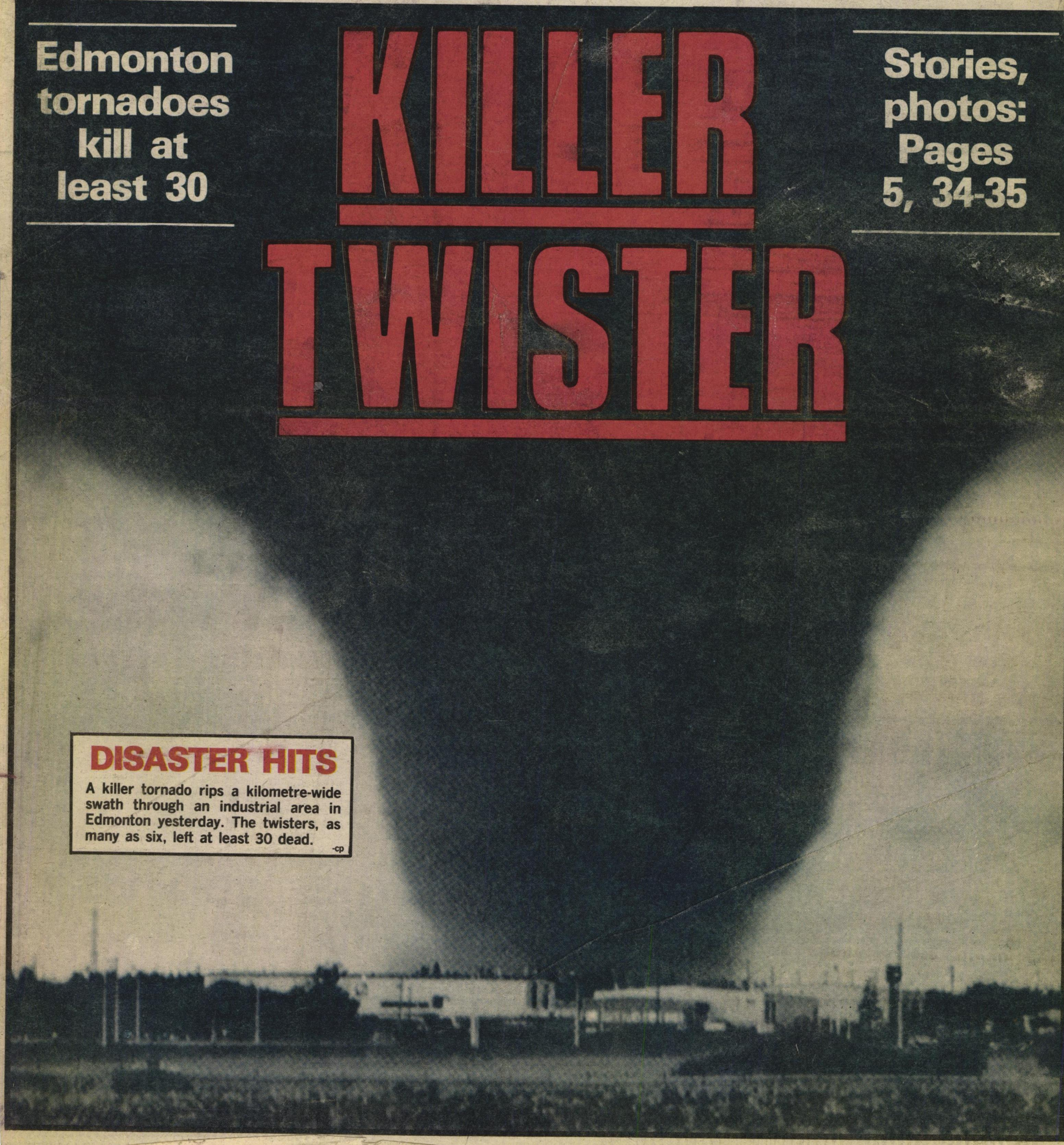
HIGHER OUTSIDE METRO TRADING AREA

VOL.1 NO.48 ••• June paid circulation 174,838 TORONTO, ONTARIO, SATURDAY, AUGUST 1, 1987 112 PAGES

Edmonton tornadoes kill at least 30

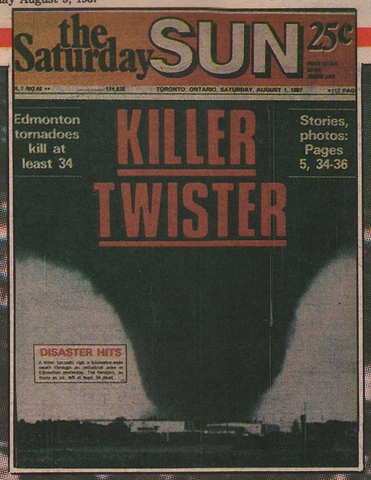
KILLER TWISTER

Stories, photos: Pages 5, 34-35



DISASTER HITS

A killer tornado rips a kilometre-wide swath through an industrial area in Edmonton yesterday. The twisters, as many as six, left at least 30 dead. -cp


the Saturday SUN 25c

TORONTO, ONTARIO, SATURDAY, AUGUST 1, 1987

Edmonton tornadoes kill at least 34

KILLER TWISTER

Stories, photos: Pages 5, 34-36

DISASTER HITS

DEVASTATED!

paul wodehouse, edmonton sun

WORST DISASTER IN CANADIAN HISTORY: Edmonton's Evergreen Mobile Home Park lays in waste after the biggest natural disaster, in dollar terms, in Canadian history. Damage is estimated at over $150 million. Inset, Toronto Sun cover reports the twister that killed 26.

881600259 WED JUN.08,1988 PAGE: A4
BYLINE: CRAIG McINNES
CLASS:*News*
DATELINE: Hamilton ONT WORDS: 377

Edmonton July/87

Tornado

** Albertans ignored peril of*tornado,*experts told **

BY CRAIG McINNES
The Globe and Mail
HAMILTON

Many Albertans did not take cover even when the deadly tornado that struck Edmonton last July could be seen marching across the outskirts of the city, the annual meeting of the Canadian Meteorological and Oceanographic Society was told yesterday.

The tornado was the most severe weather event to affect Canada in the past 30 years, said Alton Wallace, Summer Severe Weather Supervisor at the Alberta Weather Centre in Edmonton.

Mr. Wallace played amateur videos taken during the tornado showing motorists driving along the Whitemud Freeway as the tornado approached half an hour after the first funnel cloud was sighted.

The tornado, which killed 27 people, injured 300 more and caused an estimated $350-million in property damage, was then spinning around 400 kilometres an hour.

Another of the videos caused some snickering among the meteorologists in the audience as it appeared that the cameraman had been calmly filming while a cone-shaped cloud formed over his head.

The weather office issued a severe weather watch for Edmonton at 1:40 p.m. That was upgraded to a severe thunderstorm warning at 2:45.

The tornado was first spotted at 2:55 p.m. south of Edmonton. The weather office immediately put out a tornado warning that was picked up and broadcast by some local radio stations.

It is impossible to predict exactly when or where a tornado will be formed, Mr. Wallace said.

"We can identify the environments that are favorable for tornadic storm production. What we can't do yet is identify when the storm will form or which storm will produce a tornado," he said.

"We have to wait for some sort of rotation to begin in the clouds, then we can detect it."

Tornados usually form in the late afternoon when the heat of the sun has had its maximum effect, but they can also occur at night, he said.

Although they can have a disastrous impact because of their strength, tornados are very small weather events, Mr. Wallace said.

"Even this one, which was a very large tornado, was at most only a kilometre wide and lasted only an hour."

Tornados are more common than many people realize, Mr. Wallace said. In Alberta, there are an average of 16 a year that are reported.

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: *Alberta*
SUBJECT TERM: *tornados;*natural disasters
ORGANIZATION NAME: Canadian Meteorological and Oceanographic Society

87

881810262 WED JUN.29,1988 PAGE: B4
CLASS: ROB SOURCE: CP
DATELINE: Edmonton AB WORDS: 221

** Insurance firms **
** in $250 million **
***tornado*payout **

Canadian Press

Edmonton
July 87

EDMONTON
Last July's Edmonton*tornado*has battered insurance companies to the tune of about $250-million - the biggest*storm*damage*payout in*Canada's* history.

Final figures for the*damage*to property will not be known until after July 31, the anniversary of the*storm*that killed 27 people. But the property*damage*estimate is fairly accurate, said Alan Wood, regional vice-president of the Insurance Bureau of*Canada.*

''In Canada, from a pure dollar payout for our industry, it's the largest event that we've had,'' Mr. Wood said.

He said 63,000 claims relating to the tornado were reported and cleared. Of those, 32,000 were for property damage to homes, businesses and personal possessions. Another 31,000 claims were for damaged automobiles.

More than 50,000 of the claims involved hail damage.

Mr. Wood said all damage claims, repairs and payments must be resolved by July 31, a Sunday. After that, property owners have no way to ensure claims will be honored.

Mr. Wood said some claims may not be finished by the deadline but, provided everyone is in agreement on the payout size, there should be no problem.

The Insurance Act of Alberta and standard insurance policies require claims be completed within a year of the accident.

Insurance premiums are unlikely to rise because of the tornado, Mr. Wood said.

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: *Canada;*Edmonton
SUBJECT TERM: natural disasters;*tornados;*insurance industry

****

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: Edmonton
SUBJECT TERM: *tornados;*property insurance

****

::
880910105 THU MAR.31,1988 PAGE: B1 (ILLUS)
BYLINE: ANGELA BARNES
CLASS: ROB
DATELINE: WORDS: 564
::

Edmonton
July/87

** General insurance firms post record profit in '87 **

BY ANGELA BARNES
The Globe and Mail

General insurers in*Canada*turned in a record profit of just under $1.2-billion last year, Statistics*Canada*says.

That is up 16 per cent from the $1-billion after-tax profit of 1986. The 1987 profit came even as companies saw*losses*on the car insurance ledger in Ontario and paid out about $245-million in claims from the Edmonton*tornado.*

Even the return on equity figure was impressive. Last year, the return was just a shade under 15 per cent, well ahead of the 9 per cent recorded by industrial corporations. In 1986, the return was slightly higher, at about 15.5 per cent.

In light of these figures, insurers may now be asking themselves how receptive Ontario's car insurance rate review agency will be to their pleas for hefty premium increases.

Just three weeks ago, Gordon Chellew, president of the Insurers Advisory Organization, said insurers will need 25 to 30 per cent rate increases on their auto business by the time the agency gets rolling in the fall.

Jack Lyndon, president of the Insurance Bureau of Canada, does not think the Statscan numbers will make arguments before the board more difficult. "I have to think (the rate review) is a good process. It will allow us to explain our cost factors."

Right now, insurers have a problem arguing that costs justify higher premiums, he said, because "I do not think (politicians) believe our numbers."

Stan Griffin, the insurance bureau's manager of economic research, said auto insurance in Ontario "is certainly not contributing anything to the over-all industry, Canada-wide profit."

An IBC survey indicates that 30 major companies representing three-quarters of the market in Ontario lost about $142-million on Ontario auto insurance last year. That was less than a $330-million loss in 1986.

Last year's bad news for insurance companies came in the last quarter, Statscan said. That quarter was the worst in terms of operating income over the past three years. The $77.7-million pretax profit of the fourth quarter was only a fraction of the $387.7-million of the first quarter of 1987 or the $438.5-million of the second.

And even the third quarter, when insurers were tallying the claims from

873600049 SAT DEC.26,1987 PAGE: A4
CLASS: News
DATELINE: Edmonton AB WORDS: 89

** ACROSS*CANADA***
***Tornado*victims compensated **

Canadian Press
EDMONTON
The most hard-hit victims of the July 31*tornado*in Edmonton have received full compensation from the Alberta Government, says Public Safety Services Minister Ken Kowalski. He estimated $5-million has been paid to cover about 300 cases after the*tornado*that killed 27 people and caused $300-million in*damage.*Chico Bulmer, manager of the Evergreen Mobile Home Park where 15 of the 27 people died, said the province ''did a hell of a good job. They got their act together in pretty short order.''

ADDED SEARCH TERMS:

Edmonton July 187

GEOGRAPHIC NAME: *Canada*
SUBJECT TERM: *tornados;*government compensation

****

873460226 SAT DEC.12,1987 PAGE: N10
CLASS: News SOURCE: CP
DATELINE: Edmonton AB WORDS: 86

Edmonton
July 187

** ACROSS*CANADA***
***Tornado*aid less than projected **

Canadian Press
EDMONTON
Aid paid out to farmers hurt by the July 31*tornado*will be significantly less than the original projection of $10-million, a public safety official says. He said the original projection, announced in August by Agriculture Minister Peter Elzinga, included crop*losses*which were covered by*hail*and crop insurance. Twenty-seven people were killed and more than 200 injured when the*tornado*twisted along the eastern outskirts of the city, causing*damage*estimated at more than $200-million to homes and businesses.

Edmonton
Tornado

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: *Canada*
SUBJECT TERM: *tornados;*farmers

****

::

** ACROSS*CANADA***
** Farmers must wait for*tornado*aid **

Canadian Press
EDMONTON
Some farmers who suffered in the July 31*tornado*may have to wait as long as a year before their claims for government aid are processed, an official says. Ray Langman, executive director for the disaster services division of the Alberta Public Safety Service, said about $50,000 of the projected $10-million in farm aid has been given to a few farmers with "catastrophic*losses."*

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: Alberta
SUBJECT TERM: *tornados;*farmers

Edmonton July '87

****

::

872360135 MON AUG.24,1987 PAGE: A9
CLASS: News SOURCE: CP
DATELINE: Edmonton AB WORDS: 99

::

** ACROSS*CANADA***
***Tornado*plan called ridiculous **

Canadian Press
EDMONTON
The terms of Alberta's $40-million aid plan for*tornado-damaged* businesses are ridiculous, says Len Mason, owner of Lee Mason Tools, a company hit by the July 31*storm.*The plan announced Friday places a $55,000 ceiling on grants to companies that employ fewer than 100 people. Mr. Mason, who employed 30 people in his oil-field equipment sales company, estimates uninsured*losses*plus other*losses*at $1.67-million. Leslie Young, acting Minister of Economic Development and Trade, said a capital intensive business like Mr. Mason's will be eligible for substantially more than the basic grant.

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: Alberta
SUBJECT TERM: compensation;*tornados;*government grants

****

872170218 WED AUG.05,1987 PAGE: A8
CLASS: News SOURCE: CP
DATELINE: Edmonton AB WORDS: 688

** Insurers estimate Edmonton*damage*at $150 million **

Canadian Press

EDMONTON

The*tornado*that ripped through Edmonton last Friday is the most costly natural disaster in the country's history, says an official with the Insurance Bureau of*Canada.*

Alan Wood, the bureau's regional vice-president, said insured damage estimates now stand at $150-million.

''In terms of insured property damage, this is going to be the largest natural disaster ever in Canada,'' Mr. Wood said.

Twenty-six people died, almost 300 were injured and hundreds were left homeless after a savage storm swept through the eastern perimeter of the city.

The tornado ravaged two industrial districts in the southeast part of the city and a mobile-home park in the northeast, where 15 people were killed.

Edmonton July '87

Mr. Wood said initial estimates of $50-million to $100-million in damage came before adjusters had a chance to look at the industrial areas.

''There are a number of commercial buildings that appear to be standing, but when you get close it's obvious they've been moved over two feet,'' he said. ''Those could still be written off.''

Mr. Wood said people whose homes were damaged by the twister can expect to recover most of their losses.

He said the second-biggest insurance payout for a natural disaster was $30-million in the wake of the Barrie, Ont., tornado in 1985.

The Edmonton twister slashed along the east side of Edmonton and nearby suburbs, flattening homes and warehouses, mangling vehicles and pelting people and property with rain and tennis-ball-sized hail.

It was the most vicious storm to hit Canada since Hurricane Hazel swept through the Toronto area in 1954, killing 81 people.

Groups assisting storm victims have been flooded with donations of food, clothing and cash.

More than $300,000 has been donated and the group co-ordinating the relief has had to open a second warehouse to handle food, clothing and furniture.

Heather Airth, president of Edmonton Relief Services, said Red Cross figures indicate up to 1,200 families, comprising up to 3,000 people, suffered losses during the storm.

Tornado victims expressed gratitude to the governments for their rapid assistance. Free housing for a month and coverage of homeowners' uninsured losses were part of the massive government assistance program announced during the weekend.

''I'm amazed at how helpful people have been,'' said Jean Nachai, whose family lost their home and landscaping business. ''Now we feel like we can get together and be in something we can call home.''

In addition to local donations, relief funds are being set up outside the province and the country.

The Canadian Red Cross is accepting donations across the country, while an Ottawa radio station is accepting donations during a radiothon on Sunday and at a Canadian Football League game between the Calgary Stampeders and the Ottawa Rough Riders. The station will send a cheque back to Alberta with the Calgary team.

The Toronto-Dominion Bank has donated $20,000 and is accepting donations at all its branches. In Garner, N.C., where residents can sympathize with tornado strikes, the First Union National Bank has also set up a relief fund.

Meanwhile, the regional director of Environment Canada said the Edmonton weather bureau did all it could to warn residents about the tornado.

''If people are wondering if the weather office did everything it possibly could to warn people about the tornado, the answer is yes,'' said Brian O'Donnell, regional director of Alberta weather services for Environment Canada.

The weather office has been criticized by Mayor Laurence Decore over the warning given before the tornado.

''We've heard from experts as far afield as Oklahoma and Chicago, who all say it's quite remarkable we got the warnings out as fast as we did,'' Mr. O'Donnell said.

The weather office said it had a report of a confirmed sighting of funnel clouds near Leduc, 40 kilometres south of Edmonton, at 2:55 p.m. and issued a tornado warning at 3:07 p.m., ''which was as fast as as humanly possible to get it typed up and out.''

Of 100,000 thunderstorms in the United States only 1 per cent spawn tornados. Of the 1,000 tornados, about 20 are killers, Mr. O'Donnell said.

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: Edmonton
SUBJECT TERM: *storms;*tornados*

881810262 WED JUN 29,1988 PAGE: B4
CLASS: ROB SOURCE: CP
DATELINE: Edmonton AB WORDS: 221

pg 19

** Insurance firms **
** in $250 million **
***tornado*payout **

EDMONTON
Last July's Edmonton*tornado*has battered insurance companies to the tune of about $250-million - the biggest*storm*damage*payout in*Canada's* history.

Final figures for the*damage*to property will not be known until after July 31, the anniversary of the*storm*that killed 27 people. But the property*damage*estimate is fairly accurate, said Alan Wood, regional vice-president of the Insurance Bureau of*Canada.*

''In Canada, from a pure dollar payout for our industry, it's the largest event that we've had,'' Mr. Wood said.

He said 63,000 claims relating to the tornado were reported and cleared. Of those, 32,000 were for property damage to homes, businesses and personal possessions. Another 31,000 claims were for damaged automobiles.

More than 50,000 of the claims involved hail damage.

Mr. Wood said all damage claims, repairs and payments must be resolved by July 31, a Sunday. After that, property owners have no way to ensure claims will be honored.

Mr. Wood said some claims may not be finished by the deadline but, provided everyone is in agreement on the payout size, there should be no problem.

The Insurance Act of Alberta and standard insurance policies require claims be completed within a year of the accident.

Insurance premiums are unlikely to rise because of the tornado, Mr. Wood said.

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: *Canada;*Edmonton
SUBJECT TERM: natural disasters;*tornados;*insurance industry

****

Edmonton July/87

West Cpt. July 31/87 Edmonton Tornado

TORNADO

Retrospect

881070233 SAT APR. 16, 1988 PAGE: A6
CLASS: News SOURCE: CP
DATELINE: Edmonton AB WORDS: 115

** ACROSS*CANADA***
** Insurance woes follow*tornados***

Edmonton July/87

*Canadian*Press
EDMONTON
At least six Edmonton families who lost their homes when*tornados* touched down last summer are having trouble getting mortgages or may have current mortgages withdrawn because they cannot get mobile-home insurance, New Democrat MLA Ed Ewasiuk says. The Evergreen mobile home park suffered extensive*damage*in the July 31 disaster that killed a total of 27 people. Mr. Ewasiuk said the families are afraid of speaking out because they are concerned they may scare off other potential insurers. A spokesman for the Insurance Bureau of*Canada,*which represents most of the companies doing business in Alberta, acknowledged there may be a problem in some cases but maintained it is not widespread.

Toronto
1 yr ago
July 31/87

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: Edmonton
SUBJECT TERM: *tornados;*property insurance

TORNADOS

Retrospect

880910105 THU MAR.31,1988 PAGE: B1 (ILLUS)
BYLINE: ANGELA BARNES
CLASS: ROB
DATELINE: WORDS: 564

Edmonton July/87

(C) Insurance

** General insurance firms post record profit in '87 **

BY ANGELA BARNES
The Globe and Mail

General insurers in*Canada*turned in a record profit of just under $1.2-billion last year, Statistics*Canada*says.

That is up 16 per cent from the $1-billion after-tax profit of 1986. The 1987 profit came even as companies saw*losses*on the car insurance ledger in*Ontario*and paid out about $245-million in claims from the Edmonton*tornado.*

Even the return on equity figure was impressive. Last year, the return was just a shade under 15 per cent, well ahead of the 9 per cent recorded by industrial corporations. In 1986, the return was slightly higher, at about 15.5 per cent.

In light of these figures, insurers may now be asking themselves how receptive Ontario's car insurance rate review agency will be to their pleas for hefty premium increases.

Just three weeks ago, Gordon Chellew, president of the Insurers Advisory Organization, said insurers will need 25 to 30 per cent rate increases on their auto business by the time the agency gets rolling in the fall.

Jack Lyndon, president of the Insurance Bureau of Canada, does not think the Statscan numbers will make arguments before the board more difficult. "I have to think (the rate review) is a good process. It will allow us to explain our cost factors."

Right now, insurers have a problem arguing that costs justify higher premiums, he said, because "I do not think (politicians) believe our numbers."

Stan Griffin, the insurance bureau's manager of economic research, said auto insurance in Ontario "is certainly not contributing anything to the over-all industry, Canada-wide profit."

An IBC survey indicates that 30 major companies representing three-quarters of the market in Ontario lost about $142-million on Ontario auto insurance last year. That was less than a $330-million loss in 1986.

Last year's bad news for insurance companies came in the last quarter, Statscan said. That quarter was the worst in terms of operating income over the past three years. The $77.7-million pretax profit of the fourth quarter was only a fraction of the $387.7-million of the first quarter of 1987 or the $438.5-million of the second.

And even the third quarter, when insurers were tallying the claims from the Edmonton tornado and Montreal rainstorms, was much better, with pretax profits of $267.4-million.

A substantial increase in operating costs together with rising claims, especially in liability and commercial property, combined to make the final quarter relatively poor in terms of underwriting operations. Despite the October stock crash, however, investment income was up 8 per cent in the fourth quarter from the third, easing the income drop.

Written premiums declined in the fourth quarter, although they were up on the year. That drop will show up in earned premiums this year and

Sat Dec. 12/89

CLASS: News SOURCE: CP
DATELINE: Edmonton AB WORDS: 86

** ACROSS*CANADA***
***Tornado*aid less than projected **

Edmonton. July/87

*Canadian*Press
EDMONTON
Aid paid out to farmers hurt by the July 31*tornado*will be significantly less than the original projection of $10-million, a public safety official says. He said the original projection, announced in August by Agriculture Minister Peter Elzinga, included crop*losses*which were covered by*hail*and crop insurance. Twenty-seven people were killed and more than 200 injured when the*tornado*twisted along the eastern outskirts of the city, causing*damage*estimated at more than $200-million to homes and businesses.

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: *Canada*
SUBJECT TERM: *tornados;*farmers

TORNADO Retrospect

****

872680214 FRI SEP.25,1987 PAGE: A8
CLASS: News SOURCE: CP

Dead

Edmonton
July/87

XUSER/AOS01 MARCH 31, 1989 10:10 PAGE 35

DATELINE: Edmonton AB WORDS: 67

** ACROSS*CANADA***
** Farmers must wait for*tornado*aid **

*Canadian*Press
EDMONTON
Some farmers who suffered in the July 31*tornado*may have to wait as long as a year before their claims for government aid are processed, an official says. Ray Langman, executive director for the disaster services division of the Alberta Public Safety Service, said about $50,000 of the projected $10-million in farm aid has been given to a few farmers with "catastrophic*losses."*

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: Alberta
SUBJECT TERM: *tornados;*farmers

@ July 31/87

TORNADO
Retrieved

****

"do" all the sights.

****

872360135 MON AUG.24,1987 PAGE: A9
CLASS: News SOURCE: CP
DATELINE: Edmonton AB WORDS: 99

** ACROSS*CANADA***
***Tornado*plan called ridiculous **

*Canadian*Press
EDMONTON
The terms of Alberta's $40-million aid plan for*tornado-damaged* businesses are ridiculous, says Len Mason, owner of Lee Mason Tools, a company hit by the July 31*storm.*The plan announced Friday places a $55,000 ceiling on grants to companies that employ fewer than 100 people. Mr. Mason, who employed 30 people in his oil-field equipment sales company, estimates uninsured*losses*plus other*losses*at $1.67-million. Leslie Young, acting Minister of Economic Development and Trade, said a capital intensive business like Mr. Mason's will be eligible for substantially more than the basic grant.

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: Alberta
SUBJECT TERM: compensation;*tornados;*government grants

****

872340239 SAT AUG.22,1987 PAGE: A4
CLASS: News
DATELINE: Edmonton AB WORDS: 67

** ACROSS*CANADA***
** Aid after*tornado*totals $40 million **

*Canadian*Press
EDMONTON
A $40-million aid package for Edmonton-area businesses damaged in a July 31*tornado*was announced yesterday by the Alberta Government. Affected firms will be eligible for grants and interest-free loans. The *tornado*killed 27 people and caused*damage*to about $250-million worth of insured property. About 175 firms are expected to apply for the aid for *damage*not covered by insurance.

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: Edmonton
SUBJECT TERM: *storms;*tornados*

872330205 FRI AUG.21,1987 PAGE: A5
CLASS: News
DATELINE: Edmonton AB WORDS: 92

** ACROSS*CANADA***
** $10 million set to assist farmers **

*Canadian*Press
EDMONTON
A $10-million government assistance plan for farmers who suffered *damage*during a series of*storms*in late July and early August was announced yesterday by Alberta Agriculture Minister Peter Elzinga. Most of the*damage*was caused by a*tornado*that zig-zagged along the southern, eastern and northeastern edge of Edmonton on July 31. The twister killed 27 people, destroyed homes, businesses and machinery and tore up crops. Mr. Elzinga said 100 farmers suffered ''catastrophic*damage''*in the *storms.*He said 300 other farms suffered some degree of*damage.*

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: Alberta
SUBJECT TERM: agriculture; farms; finance;*storms;*tornados*

Edmonton July/87

Edmonton Tornado Retrospect

****

872240253 WED AUG.12,1987 PAGE: A5
CLASS: News SOURCE: CP
DATELINE: Montreal PQ WORDS: 83

** ACROSS*CANADA***
** Class action suit filed for victims of flood **

*Canadian*Press
MONTREAL
A Montreal lawyer has filed a class-action suit on behalf of all victims of the torrential floods that hit the city on July 14. Lawyer Irwin Liebman filed the suit in*Quebec*Superior Court on Monday, naming all Montreal Island municipalities. Montreal suffered damages estimated at $229-million during the*storm,*which left one man dead. The*Quebec*and federal governments have allocated $40-million to pay for*damage,*but have said they will only pay to replace essential items.

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: Montreal
SUBJECT TERM: floods;*storms;*accident victims;*damage*suits

Floods from July 14/87

****

872200087 SAT AUG.08,1987 PAGE: F4

July 87
Edmonton

::::::

872170218 WED AUG.05,1987 PAGE: A8
CLASS: News SOURCE: CP
DATELINE: Edmonton AB WORDS: 688

** Insurers estimate Edmonton*damage*at $150 million **

*Canadian*Press
EDMONTON

The*tornado*that ripped through Edmonton last Friday is the most costly natural disaster in the country's history, says an official with the Insurance Bureau of*Canada.*

Alan Wood, the bureau's regional vice-president, said insured damage estimates now stand at $150-million.

''In terms of insured property damage, this is going to be the largest natural disaster ever in Canada,'' Mr. Wood said.

Twenty-six people died, almost 300 were injured and hundreds were left homeless after a savage storm swept through the eastern perimeter of the city.

The tornado ravaged two industrial districts in the southeast part of the city and a mobile-home park in the northeast, where 15 people were killed.

Mr. Wood said initial estimates of $50-million to $100-million in damage came before adjusters had a chance to look at the industrial areas.

''There are a number of commercial buildings that appear to be standing, but when you get close it's obvious they've been moved over two feet,'' he said. ''Those could still be written off.''

Mr. Wood said people whose homes were damaged by the twister can expect to recover most of their losses.

He said the second-biggest insurance payout for a natural disaster was $30-million in the wake of the Barrie, Ont., tornado in 1985.

The Edmonton twister slashed along the east side of Edmonton and nearby suburbs, flattening homes and warehouses, mangling vehicles and pelting people and property with rain and tennis-ball-sized hail.

It was the most vicious storm to hit Canada since Hurricane Hazel swept through the Toronto area in 1954, killing 81 people.

Groups assisting storm victims have been flooded with donations of food, clothing and cash.

More than $300,000 has been donated and the group co-ordinating the relief has had to open a second warehouse to handle food, clothing and furniture.

Heather Airth, president of Edmonton Relief Services, said Red Cross figures indicate up to 1,200 families, comprising up to 3,000 people, suffered losses during the storm.

Tornado victims expressed gratitude to the governments for their rapid assistance. Free housing for a month and coverage of homeowners' uninsured losses were part of the massive government assistance program announced during the weekend.

''I'm amazed at how helpful people have been,'' said Jean Nachai, whose family lost their home and landscaping business. ''Now we feel like we can get together and be in something we can call home.''

In addition to local donations, relief funds are being set up outside the province and the country.

The Canadian Red Cross is accepting donations across the country, while an Ottawa radio station is accepting donations during a radiothon on Sunday and at a Canadian Football League game between the Calgary Stampeders and the Ottawa Rough Riders. The station will send a cheque back to Alberta with the Calgary team.

The Toronto-Dominion Bank has donated $20,000 and is accepting donations at all its branches. In Garner, N.C., where residents can sympathize with tornado strikes, the First Union National Bank has also set up a relief fund.

Meanwhile, the regional director of Environment Canada said the Edmonton weather bureau did all it could to warn residents about the tornado.

''If people are wondering if the weather office did everything it possibly could to warn people about the tornado, the answer is yes,'' said Brian O'Donnell, regional director of Alberta weather services for Environment Canada.

The weather office has been criticized by Mayor Laurence Decore over the warning given before the tornado.

''We've heard from experts as far afield as Oklahoma and Chicago, who all say it's quite remarkable we got the warnings out as fast as we did,'' Mr. O'Donnell said.

The weather office said it had a report of a confirmed sighting of funnel clouds near Leduc, 40 kilometres south of Edmonton, at 2:55 p.m. and issued a tornado warning at 3:07 p.m., ''which was as fast as as humanly possible to get it typed up and out.''

Of 100,000 thunderstorms in the United States only 1 per cent spawn tornados. Of the 1,000 tornados, about 20 are killers, Mr. O'Donnell said.

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: Edmonton
SUBJECT TERM: *storms;*tornados*

****

872130158 SAT AUG.01,1987 PAGE: A1 (ILLUS)
BYLINE: MATTHEW FISHER
CLASS: News SOURCE: CP
DATELINE: Edmonton AB WORDS: 1150

Edmonton July/87

Edmonton Tornado

TORNADO

***Tornados*batter Edmonton, kill 30 **
** Disaster declared by mayor **

BY MATTHEW FISHER
The Globe and Mail
with*Canadian*Press
EDMONTON

At least 30 people were killed and at least 250 were injured as *tornados*passed through Edmonton and its suburbs yesterday in two waves during the afternoon rush hour.

Mayor Laurence Decore said 27 people died in the city itself, 24 in a northeastern trailer court flattened by the twisters.

Jocelyn Tennison, a spokesman for the County of Strathcona, on the south and east outskirts of the city, said three people working in an industrial area were confirmed dead there.

At least 100 people were taken to Edmonton hospitals by a fleet of ambulances, which struggled through debris-clogged streets.

Ms Tennison said 150 people were injured in Strathcona.

There also were several reports of people trapped in basements and collapsed buildings, and broken gas mains were reported to have started several fires.

Mr. Decore declared a state of emergency and called in all off-duty police officers and fire fighters.

"I've lived in Alberta all my life and I've never experienced anything like this," he said from an emergency command post. "We have reports of deaths and many injuries and heavy flooding in several parts of the city. I am told the winds have exceeded 100 kilometres an hour."

In parts of southeast Edmonton, many homes and businesses in a 20-block area were destroyed. Automobiles were stacked on top of one another as in a wrecking yard, a witness reported.

Police advised all residents to remain indoors, and to make sure that gas lines were shut off and that windows were left slightly open to lessen the air pressure inside. Fires from gas lines and downed power lines were reported all over the city. Many roads were impassable.

Red Cross House established emergency shelters for the homeless, and all Edmonton hospitals were asking doctors and nurses to report immediately for emergency duty. A spokesman for the Edmonton Police said the force was swamped with hundreds of calls for help. The city requested assistance from out-of-town ambulance services.

Stacks of cumulo-nimbus clouds reaching to at least 20,000 metres were to be seen south and west of Edmonton in the hours preceding the storms.

That sight was followed by increasingly dark skies, severe winds and hail the size of baseballs. The first wave of the storm lasted about one hour, as temperatures plunged dramatically from 30 degrees to below freezing.

''From the weather office window we saw five or six tornados forming off to the west," said Environment Canada meterologist Ken Nellis.

He said there were two lines of very intense thunderstorms, and the first had several tornados in it. "They moved out of the foothills into very hot air on the plains and they really took off."

The storm developed in an area about 70 kilometres south of Edmonton and moved rapidly northeastward.

Damage was estimated in the millions of dollars.

Police chief Leroy Chahley said there were reports of looting and extra patrols had been sent to the ruined areas.

Funnel clouds touched down repeatedly and swirling winds smashed buildings, tossed cars around like toys and uprooted trees.

One twister landed in an industrial area of Sherwood Park, just east of Edmonton, at 3:55 p.m., and for the next 35 minutes bounced around the area creating havoc wherever it went. Industrial buildings were missing either their roofs or siding and some structures and several huge cranes were flattened.

Police believe there are more bodies buried under the rubble in the industrial park and in the trailer park.

Rescue workers used cranes and bulldozers to clear wreckage as they searched for trapped victims.

Strathcona Reeve Jim Common said four seven-member RCMP teams with dogs were combing through wreckage in the industrial area covering about 10 square kilometres.

''We believe most of the people injured seriously have been taken out, but we won't know until the search is done," he said. "It's a slow process to go through each building, but that's all we can do.''

Initial rescue efforts were hampered by repeated thunder squalls that swept over the city like breaking waves. The downpour flooded underpasses throughout the city, leaving cars marooned.

One man said he saw trucks and houses flying across a street as he drove home from work to the southeastern suburb of Millwoods. Dale Campbell said he helped several badly injured people to ambulances.

Gordon Lechelt, of Sherwood Park, watched the tornado approach a tool shop.

''We went outside to watch it and it got bigger and we all ran back into the shop,'' he said. ''Suddenly it was as if we were in the middle of hell. The cement walls were sucked out in seconds and rubble covered all 20 of us.''

Mr. Lechelt said he clambered out from under bricks and beams, but some of his companions died. ''I heard crying for help all around.''

Mr. Decore surveyed the damage at the Evergreen Mobile Home Park where he saw more than 100 of 700 trailers demolished. Chunks of sheet metal were wrapped arund telephone poles and some of those trailers that were not demolished were lying on their backs.

In other places, as many as 20 trailers were smashed together in a pile. Small parks and children's playgrounds were covered with debris and mobile homes.

James and Patricia Cunningham counted themselves among the fortunate. "Our trailer is a 100 per cent write off," Mrs. Cunningham said. "When we arrived a few minutes after the tornado left the area all that we could find were a few of our clothes and, by some miracle, our dog."

By dusk last night, five hours after the tornado touched down in the trailer park, police said they had searched about half of the area for survivers. If there was anyone else in the remaining area, police said they did not expect them to be alive.

Several high schools and hotels opened their doors to people requiring shelter. Officials at Bonnie Doon High School said about 70 families were bunking in for the night there.

Although hundreds of injured have been taken to hospital, the Red Cross said last night that blood supplies were holding up well.

In Beaumont, 10 kilometres south of Edmonton, barns were hurled from their foundations. A woman in Beaumont said a friend was sitting in her home when she realized all the vehicles in her yard - including several cars, a mobile home and a motorcycle - had disappeared.

In May of 1985, a tornado devastated the Barrie, Ont., area, killing 12 people. In October of 1954, Hurricane Hazel killed more than 80 people in the Toronto area.

People who wish to inquire whether friends or relatives are casualties of the Edmonton storm should call the victim services unit of the Edmonton Police at (403) 421-2213. People are asked to refrain from calling unless they have a direct and essential question.

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: Edmonton
SUBJECT TERM: *storms;*tornados;*deaths*

872680214 FRI SEP.25,1987 PAGE: A8
CLASS:*News* SOURCE: CP
DATELINE: Edmonton AB WORDS: 67

Edmonton
July/87

** ACROSS CANADA **
** Farmers must wait for*tornado*aid **

Canadian Press
EDMONTON
Some farmers who suffered in the July 31 tornado may have to wait as long as a year before their claims for government aid are processed, an official says. Ray Langman, executive director for the disaster services division of the Alberta Public Safety Service, said about $50,000 of the projected $10-million in farm aid has been given to a few farmers with "catastrophic losses."

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: *Alberta*
SUBJECT TERM: *tornados;*farmers

872330205 FRI AUG.21,1987 PAGE: A5
CLASS:*News* WORDS: 92
DATELINE: Edmonton AB

Edmonton
July/87

** ACROSS CANADA **
** $10 million set to assist farmers **

Canadian Press
EDMONTON
A $10-million government assistance plan for farmers who suffered damage during a series of storms in late July and early August was announced yesterday by Alberta Agriculture Minister Peter Elzinga. Most of the damage was caused by a tornado that zig-zagged along the southern, eastern and northeastern edge of Edmonton on July 31. The twister killed 27 people, destroyed homes, businesses and machinery and tore up crops. Mr. Elzinga said 100 farmers suffered ''catastrophic damage'' in the storms. He said 300 other farms suffered some degree of damage.

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: *Alberta*
SUBJECT TERM: agriculture; farms; finance;*storms;*tornados*

Edmonton July '87

lyf- ogg

July 31/87

Retrospect

TORNADO

Edmonton Tornado

EDMONTON

The*tornado*that struck Edmonton a year ago yesterday, killing 27 people and causing millions of dollars' worth of*damage,*left at least one small blessing amid the destruction and chaos in its wake.

The massive relief effort that sprang up is still helping the needy and the destitute, though the immediate crisis has long since passed.

Donations of food, clothing, furniture and money started coming from across Canada within hours of the disaster, turning the province's Emergency Relief Services society into a huge operation almost overnight.

''We've had a very high profile because of the tornado . . . it's a silver lining in the sense that we're able to help a lot of people,'' society director Heather Airth said.

The organization, launched in 1986 to help families burned out by house fires, grew to employ about 1,000 volunteers a day, sprawling to fill three buildings and stockpiling more goods than a department store warehouse.

Ms Airth still is not sure how it was possible. ''We were just too stupid to know that it couldn't be done, so we rolled up our sleeves and did it.''

In the first night after the twister struck, 50 volunteers sorted donations while people lined up in the rain to donate more, Ms Airth said. ''It was a sad time, but it was a beautiful time too, because I think Edmontonians really shone.''

The society makes donations to about 250 people a month, compared to about 40 a month before the disaster. These include battered women who have fled home with nothing, the elderly and the poor in small towns and Indian reserves across Alberta.

But despite the successes, the group has had its problems.

Its lease on the space used for storage expires at the end of August, and the society is scrambling to find a new home.

City officials insist the society does not need all of the clothes and furniture it has, but the group contends it has done a good job of cutting its stocks since last summer.

In future, director Carol Smith hopes for government grants to allow members of the all-volunteer society to be paid for their five-or six-day work weeks.

Although she said she would not want to repeat the long hours she worked a year ago, she admitted that if disaster struck she would be at the centre of things again. ''If the tornado happened again, I would probably be one of the first ones here, opening the doors.''

While Emergency Relief Services was collecting mountains of supplies, the Red Cross was collecting a mountain of cash. The Canadian Red Cross Tornado Relief Fund took in $2.3-million.

Edmonton Red Cross president Rick Tyre said he does not know why the fund grew to such a huge total. ''I have no idea - it just kept coming in.''

He said the largest amount was paid to the 244 people injured by the twister, each eligible for grants of between $1,000 and $10,000 for pain and suffering.

Each of the 728 applicants who lost more than $300 in property received $300 for their time and inconvenience, Mr. Tyre said.

The money, along with a lump sum to the estates of the people killed, was distributed by this spring, but there is still about $900,000 left for severely injured people with long-term problems, he added.

Mr. Tyre is proud of the way the fund helped victims of the tornado,

872150138 MON AUG.03,1987 PAGE: A3
CLASS: News SOURCE: CP
DATELINE: Edmonton AB WORDS: 102

Edmonton
July '87

***TORNADO*AFTERMATH **
** Medical examiner lists victims **

*Canadian*Press
EDMONTON
Here is a list of people killed in the Edmonton*tornados*on Friday, as supplied by the Alberta chief medical examiner's office:
Jim Allan, 51.
Sharon Andruchow, 15.
Merle Bain, 50.
Marie Barker, 50.
Manuel Carreiro, 38.
George Demetrios, 19.
Edward Dery, 40.
Ajmer Dhaliwal, 30.
Lloyd Fankhanel, 55.
Richard Gillespie, 29.
Frederick Hartfeil, 34.
Daniel Lewis, 18.
To Ly, 46.
Edito Mendosa, 40.
Clement Nault, 54.
Alfred Nolin, 82.
Etta Nolin, 73.
Graham Palmer, 43.
Kelly Pancel, 18.
Mary Putnam, 59.
Diane Reimer, 13.
Darcy Reimer, 11.
Dawn Reimer, 11.
Marvin Reimer, 40.
Patricia Robinson, 30.
Gregory Trabenik, 41.

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: Edmonton
SUBJECT TERM: *storms;*tornados;*deaths;*list

Edmonton Tornado

Retrosp. TORNADO

July 87

::
872340239 SAT AUG.22,1987 PAGE: A4
CLASS: News
DATELINE: Edmonton AB WORDS: 67
::

** ACROSS*CANADA***
** Aid after*tornado*totals $40 million **

Canadian Press
EDMONTON
A $40-million aid package for Edmonton-area businesses damaged in a July 31*tornado*was announced yesterday by the Alberta Government. Affected firms will be eligible for grants and interest-free loans. The *tornado*killed 27 people and caused*damage*to about $250-million worth of insured property. About 175 firms are expected to apply for the aid for *damage*not covered by insurance.

Edmonton July '87

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: Edmonton
SUBJECT TERM: *storms;*tornados*

****

::
872330205 FRI AUG.21,1987 PAGE: A5
CLASS: News
DATELINE: Edmonton AB WORDS: 92
::

** ACROSS*CANADA***
** $10 million set to assist farmers **

Canadian Press
EDMONTON
A $10-million government assistance plan for farmers who suffered *damage*during a series of*storms*in late July and early August was announced yesterday by Alberta Agriculture Minister Peter Elzinga. Most of the*damage*was caused by a*tornado*that zig-zagged along the southern, eastern and northeastern edge of Edmonton on July 31. The twister killed 27 people, destroyed homes, businesses and machinery and tore up crops. Mr. Elzinga said 100 farmers suffered ''catastrophic*damage''*in the *storms.*He said 300 other farms suffered some degree of*damage.*

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: Alberta
SUBJECT TERM: agriculture; farms; finance;*storms;*tornados*

****

873600049 SAT DEC.26,1987 PAGE: A4
CLASS: News
DATELINE: Edmonton AB WORDS: 89

Edmonton
July/87

** ACROSS*CANADA***
***Tornado*victims compensated **

*Canadian*Press
EDMONTON
The most hard-hit victims of the July 31*tornado*in Edmonton have received full compensation from the Alberta Government, says Public Safety Services Minister Ken Kowalski. He estimated $5-million has been paid to cover about 300 cases after the*tornado*that killed 27 people and caused $300-million in*damage.*Chico Bulmer, manager of the Evergreen Mobile Home Park where 15 of the 27 people died, said the province ''did a hell of a good job. They got their act together in pretty short order.''

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: *Canada*
SUBJECT TERM: *tornados;*government compensation

July 31/87

872200225 SAT AUG.08,1987 PAGE: A6
CLASS: News SOURCE: CP
DATELINE: Edmonton AB WORDS: 63

Edmonton
July/87

** ACROSS*CANADA***
Tornado*toll rises to 27 as man dies of*injuries

Canadian Press
EDMONTON
The*death*toll from the devastating*tornado*that hit the city on July 31 rose to 27 as an Edmonton man died in hospital. The Alberta medical

examiner's office said yesterday that Eugene Zaparyniuk, 42, died on Thursday from*injuries*suffered in the*tornado.*He had been in critical condition since he was injured. More than 200 other people were injured.

ADDED SEARCH TERMS:
GEOGRAPHIC NAME: Edmonton
SUBJECT TERM: *storms;*tornados;*deaths*

ZEPHYR

Environment Canada | Environnement Canada

Atmospheric Environment Service

OCTOBER/NOVEMBER 1987

Forecaster tells Edmonton Tornado story

The tragic Edmonton tornado of July 31, 1987 was the worst experienced in the city during 97 years of observations. The death toll was 27 and damage was estimated at $250 million. Since that time several government reports have been written. The one we have selected for Zephyr readers was an account put together by Garry Atchison, the severe weather forecaster on that day. Mr. Atchison is a senior meteorologist who has been with the weather service for 23 years and has served at the Alberta Weather Centre since 1980.

The last ten days of July 87 were exceedingly hot and humid in Alberta. Record highs from 31 to 37C were set at several sites. The dewpoint temperatures . . . a basic measure of humidity which averages 10 degrees in an Alberta summer. . . were reaching the 17 to 21 range during the last week of July. The Alberta Weather Centre had issued severe thunderstorm watches and warnings almost every day for some regions of the province. Subsequent damage reports, confirmed the daily development of these storms with damaging winds, large hail, torrential downpours and record levels of lightning.

On Thursday, 30 July, two bands of severe thunderstorms developed late in the day and crossed the Edmonton region, with the first affecting the city while the later one passed to the north during the night. The daily count from the lightning detection system exceeded 40,000 cloud-to-ground strikes, a new record. Arrangements were being made to personally check a report of tornado damage from a weather watcher about 100 km out of Edmonton if Friday's workload would permit.

By Friday morning all watches and warnings had been terminated and skies were practically clear. At least one radio announcer scoffed at the 5 AM forecast of 80 percent probability of "thunderstorms at times heavy." After the 7 AM shift change, the day shift, which includes the severe weather forecaster, considered the possibility that the worst threat was over since the surface temperatures and dewpoints were both lower, and the cloud pattern over Saskatchewan suggested that the more dangerous tropical air mass had moved eastward; i.e. that Thursday's action had been related to a weak cold front. However the usual detailed analysis of the current state of atmospheric stability showed that good potential for severe thunderstorms remained.

The computer models looked reasonable in pushing a cooling upper trough into southern Alberta late in the day. This development would mean that the high level jetstream which started the day over eastern BC would shift into a south-north core over central Alberta by evening.

At the 10:15 AM forecast team consultation, the forecast of thunderstorms was confirmed for most regions, with a large area of severe thunderstorm potential from the southeastern Peace River district to Medicine Hat, including Edmonton, Red Deer and Calgary.

By 11:15 AM, beeps from the lightning detection unit confirmed that thundershowers had formed over the southern Rockies. A Severe Weather Watch was issued for the Calgary and Red Deer regions.

As the lightning developed northward, and weather radar and satellite imagery confirmed cumulonimbus development oriented NNW-SSE over the foothills north of Sundre, confidence rose that the severe thunderstorms forecast earlier were likely to materialize.

Though low level wind flows showed an increasing southerly flow, the radar showed motion of the cells from a southwesterly direction at the surprisingly high speed of 60 to 70 km/h. That would bring them near Edmonton.

By 1:40 PM as the radar echoes showed tops approaching 10 km and sustained echo strength at the second highest value, the weather watch was extended to Edmonton and adjoining regions.

continued on pg. 4



Photo: Rob den Hartigh

Photo of huge funnel cloud taken from the roof of the Edmonton building that houses AES Regional Weather Centre.

Look out for special on Calgary Winter Olympics in March issue

Canada

AES, Indian Affairs Sign Major Training-on-the-Job Accord

ADMA Howard Ferguson and Don Allen, assistant deputy minister, Economic Development, Department of Indian and Northern Development (DIAND) signed a Memorandum of Agreement (MOA) in Ottawa on August 24.

It will be the first Training-on-the-job national agreement for either Environment Canada or for DIAND. The end result will be the hiring by AES of approximately 12 native meteorological technicians in all the AES Regions.

Because of the Agreement, AES will increase the number of natives employed in the Service as Weather Observers by the end of the program. Meanwhile DIAND will further its objectives to improve the employment and earning potential of Indian and Inuit workers.

The project is divided into five phases. Phase I, now completed, involves the selection of candidates by AES regional recruiting officers from a DIAND inventory. The target was to choose 16 recruits from the various regions.

If more than 12 successfully completed the training, extra jobs would be opened up for them. Things the recruiters looked for included language ability, successful completion of secondary school with good marks in mathematics and physics, mobility and completion of the meteorological technician recruitment aptitude test.

Phase II, now underway involves sending all recruits to a weather office or weather station near their home. Their duties will be in support of day-to day operations, under AES staff supervision. Recruits will try to familiarize themselves with procedures and assist in weather observing duties. The phase ends with an assessment of the candidates in the area of personal suitability.



Don Allen ADM, Indian Affairs and Northern Development and Howard Ferguson ADM, AES sign memorandum of agreement

Phase III (November 20, 1987 - February 19, 1988) will allow those who pass the suitability tests to take the Surface Weather Observing and Maintenance (SWOM) course at the Transport Canada Training Institute (TCTI) in Cornwall, Ontario.

Phase IV (February 22 - April 1, 1988) begins when successful SWOM graduates return home for a further assignment with a view to preparing them for additional TCTI training and assessing their qualifications for full-time AES employment. Duties will include participation in station weather watch programs, performance of unsupervised surface weather observations, maintaining weather displays or servicing meteorological instruments.

Phase V (April 4 - June 17, 1988) begins when trainees, after further assessment, take the Meteorological Technicians Qualification Course at TCTI. Upon reaching this stage, trainees assume AES training status.

Brenda Smith, from the office of the director general, Weather Services Directorate and occupying the position of National Program liaison officer of the Training-on-the-job program, told Zephyr "It appears that everything is on target. The recruits are now undergoing their initial training in the Regions."

Nurse Maudrie Retires

It wasn't your usual retirement gathering.

When Maudrie Crichlow, Public Health Nurse at AES Downsview for the past five years sat down with a "few friends" for tea in the Central Services Directorate boardroom one afternoon this summer, people from all parts of the building crowded in to say farewell to a very popular nurse.

Joe Boll, director of Finance and Administrative Services gave official thanks to Maudrie from AES and pesented her with a gift. But there were dozens of unofficial well-wishers. and the tea was quite a sumptuous spread complete with retirement cake. Maudrie was born and educated in Trinidad. Upon graduating LCFAS a Registered Nurse she spent the next eight years nursing at Trinidadian Hospitals. Then in 1954 she emigrated to England. There she trained to become a British Registered Nurse and subsequently spent several years nursing in London hospitals.

In 1969 Maudrie emigrated once more — this time to Canada. After studying to become a Canadian Registered Nurse, she nursed at North York General Hospital and in 1971 joined Health and Welfare Canada. Her first assignment was to Baffin Island N.W.T.

Returning to Toronto after two years Ms. Crichlow was assigned to the Post Office Department, to the Health and Welfare Regional Office, to the Toronto Taxation Office and to Government Services at a large federal building in North York. She came to AES in 1982.

At the ceremony Maudrie told her audience that she really found AES Downsview to be her home and all the people there like her family. "I regret I came here so late in my career", she concluded.

AES at Global Ozone Conference

On September 16, 24 nations signed a landmark agreement to protect the ozone layer. Environment Canada was proud to play a key role in both the development and the final signing of this historic accord. In the first agreement of its kind, participating nations pledged to reduce industrial chemicals which are threatening the earth's ozone layer. This fragile layer of gases in the upper atmosphere shields us from the damaging effects of the sun's ultra-violet rays, including skin cancer and crop loss.

The agreement was signed in Montreal at a diplomatic conference hosted by Environment Canada under the auspices of the United Nations Environment Program. Environment minister Tom McMillan signed the accord for Canada. Dr. Alex Chisholm, of AES Research Branch in Downsview, was a key figure on the Canadian delegation, providing scientific expertise on the ozone layer. For over five years, Dr. Chisholm, together with Vic Buxton of Conservation and Protection and John Allen of External Affairs, made up a Canadian team that played a vital role in the lengthy international negotiations that led to the development of the final agreement.

The conference was a grand success, attended by more than 200 delegates from 62 countries and over 100 members of the media. AES participants included Dr. Wayne Evans, Dr. Jim Kerr and Lewis Poulin, all of Research Branch in Downsview. They staffed a display of AES high-tech instruments and were kept busy informing the world about our ozone research.



Maudrie Crichlow cuts her retirement cake

ZEPHYR

ZEPHYR is a staff magazine for employees of the Atmospheric Environment Service, Environment Canada, produced by the Communications Directorate of Environment Canada.

Please address correspondence or article contributions to: ZEPHYR, Atmospheric Environment Service, 4905 Dufferin Street, Downsview, Ontario M3H 5T4.

Editor: Gordon Black
Editorial Assistant: Darlene Lavigne
Photo assistance: Bill Kiely, Joan Badger
Phone: (416) 667-4551

Environment Canada | Environnement Canada

Atmospheric Environment Service | Service de l'environnement atmosphérique

Marine Weather Services in Atlantic Region

AES Atlantic region includes all or a portion of five provinces, has nearly 20,000 kilometres of coastline, experiences some of the stormiest weather in the Western Hemisphere and plays host to the fishing fleets of several nations.

Canada's other major commercial coastline is the British Columbia shore, shorter in length than its eastern counterpart and in many ways less convoluted; for example it only covers one province, has an overall length of perhaps 2,000 kilometres and has no ice problems.

Both Atlantic and Pacific regions are aware of the importance of good, accurate marine weather forecasting. Both regions have experienced their share of weather related marine accidents from the Ocean Ranger disaster off the coast of Newfoundland in 1983 to numerous fishing boat accidents in the Pacific. But because of the LeBlond report it is Pacific region that has so far received most of the resources and person years to enhance its marine weather services.

For the staff of the Maritimes and Newfoundland Weather Centres this is worrying. Currently there are no specialist marine weather personnel at the two Weather Centres. But when you are number two you try harder!



Jim Abraham, left, and Peter Bowyer pore over maps at a makeshift marine weather desk at the Atlantic Region Weather Centre

Now, says Maritimes Weather Centre supervisor Jim Abraham, the Atlantic Region is all set to branch out in several directions in order to gain a greater understanding of sea and coastal weather and to be able to forecast it more accurately.

For example, the Maritimes Weather Centre has been designated as Canada's Hurricane Centre. Incorporating the essentials of the U.S. Hurricane Centre in Florida, the Centre will pass on critical information on tropical storms to the other regions of Eastern Canada.

Also the Maritimes and Newfoundland Weather Centres are endeavouring to establish, some time this winter, specialized marine weather desks during daytime hours. At the moment, the prognostic personnel alternate with the public forecast staff to take on marine forcasting duties and produce four times a day marine forecasts for an enormous area — from the east Labrador Sea near Greenland to George's Bank about 100 km east of Cape Cod. In many ways adds Abraham, "Manning the new desks will be an adventure. We are prepared to initiate this project as soon as possible because we know it is important and we will expand the hours of coverage as resources are made available to do so."



Photo: Gordon Black

If peaceful scenes like this, taken at Port Dufferin, N.S., were the norm there would be no need for marine weather services in the Atlantic Region.

Two other events are adding to Atlantic region's lustre as a marine weather bastion. Several of the sessions at the workshop on operational meteorology held October 14-16 in Halifax, N.S. highlighted marine weather. For example, T. Sutherland of the Ontario Weather Centre spoke on storm surges on Lake Erie and the use of the Weather Centre's storm surge model. F. Saunders, renowned professor emeritus at the Massachusetts Institute of Technology (MIT) introduced the topic of forecasting explosive cyclogenesis and J. Pearce of the Maritimes Weather Centre covered the subject as it applies to the East Coast. E. J. Oja of AES Pacific Weather Centre described the West Coast marine radio user contact program.

All in all the workshop was a first for the Atlantic region and according to Abraham a fitting start to a new era in marine weather for the region.

The final landmark in the Atlantic region's marine weather progress is the development by forecaster Al MacAfee of COMAR, a computer program that has the capability of turning alphanumeric symbols typed in by the operator into everyday language. This gives the forecaster more time to assess the marine weather situation — time that would otherwise be spent writing the forecast out in full.

Abraham says that the Maritimes Weather Centre is the first in Canada to have such a coded transfer system and it is significant that the breakthrough has come in the area of marine weather.

Commenting on marine meteorology in the Atlantic region, Paul Galbraith OIC Maritimes Weather Centre, stressed the importance of the Canadian Atlantic Storm Project (CASP) held south of Nova Scotia last year. "We benefited from the experimental forecasts made by AES scientists. We were also able to supply the CASP scientists with the storm predictions they needed to carry out their experiments." Paul added that the area south of Nova Scotia is ideal for mesoscale storm projects and is a good place to monitor "explosive deepeners". For this reason, roughly the same area has been chosen for another major Atlantic storm project — ERICA, scheduled for December 1988 and in which the U.S. would play the lead role. Canada and AES in particular would lend support with weather forecasts, aircraft and high technology meteorological equipment.

Summing up the expansion of marine weather services in the Atlantic region, AES regional director Dr. Des O'Neill said "We are committed to providing the best possible weather warning and forecast services to fishermen and other mariners operating off our coasts. Obtaining additional resources to complete the initiatives which have been undertaken is the number one priority of AES managers."

Phil Merilees Leaves AES for Director's Post at NCAR

Dr. Philip Merilees who for the past three years has held the position of director general, Atmospheric Research Directorate, at AES Downsview Headquarters, has resigned to become director of the Mesoscale and Microscale Meteorology Division, National Center for Atmospheric Research, Boulder, Colorado.

Dr. Merilees joined AES in 1977 as chief scientist for the Canadian Climate Centre. Before that he spent about a decade at McGill University's faculty of meteorology, rising to become chairman of the department in 1976. Earlier he had served two years as executive secretary of the Global Atmospheric Research Program (GARP). He also served on numerous national and international committees and was president of the Canadian Meteorological Society in 1974-75.

Dr. Merilees obtained a B.Sc. in Physics from Sir George Williams University, Montreal in 1960, a M.Sc. in Physics from Carleton University (Ottawa) and a Ph.D in Meteorology from McGill in 1966.

A farewell reception was held for Dr. Merilees at AES Downsview on September 2. Jim Young, director of Air Quality Research acted as master of ceremonies. Both he and ADMA Howard Ferguson gave farewell speeches, summing up Dr. Merilees career.

About 80 people attended the reception from many divisions of AES as well as some former employees. Prominent among these was Barney Boville, former director of the Canadian Climate Centre.



Dr. Phil Merilees clears his office drawer on his last day at AES.

Tornado — *continued*

By 2:45 PM acceleration to 80 km/h and tops rising to 12 km were considered sufficient cause to refine the watch to a Severe Thunderstorm Warning for Edmonton city and the counties to the south and west.

Within minutes a citizen near Leduc reported seeing an apparent rope-like tornado touch down for 10 seconds and disappear. Considering the forecast severe instability and proximity to major population area, this prompted an immediate Weatheradio Alert for the tornado warning which was composed for hardcopy transmission at 3:07 PM. That no sooner done than off-duty briefer, Pat Kyle, reported a tornado on the extreme southeast of the city. While this was relayed by Weatheradio the first tornado warning update was issued about 3:30 pm.

By this time severe weather assistant Pat McCarthy, and others, were rushing back and forth to the roof of our office buiding, relaying visual rports of the tornado's size and direction. Like most other citizens we were mesmerized by this phenomenon and only reluctantly took cover in the basement as all power failed and the tornado passed about 2 km east of our location. Before doing so, we had been able to reach Prairie Weather Center in Winnipeg by phone to handover forecast responsibility to them.

We were back again within a half hour and, with emergency power, resumed forecast responsibility and issued further updates, maintaining tornado warning status until 7:00 pm as an equally severe thunderstorm complex approached and passed over the central and northern parts of the city. Wind gusts over 110 km/h, rain and more large hail added to the damage in and near the city.

By 8 PM all danger was over and warnings and watches were ended or running down. The cold front had indeed swept through, with a vengeance! By morning a cold intermittent rain settled in on the survivors and disaster response teams working their way through the wreckage.

Storm effects:

Destruction in the narrow swath swept by the tornado over the eastern edge of Edmonton was literally incredible for a city that had never experienced significant tornado damage before. During its one hour lifespan it skipped along a path 40 km long and varying in width from 100 to 1000m. Heavy trucks and empty rail cars were reported completely airborne. Mobile homes, houses, and industrial sheds and plants were totally destroyed. Hailstones the size of misshapen softballs penetrated some roofs like cannonballs.

After the survey, this storm was assigned a level 4 on the five point Fujita scale, a value rarely exceeded in TORNADO ALLEY of the mid-western US. In the past 97 years there have been only seven other documented tornado incidents in Edmonton and these had caused negligible damage.

Twenty seven deaths were recorded with permanent injury to at least one survivor. Damage was estimated at 250 million dollars including outright destruction and property damage, men and material costs for rescue and repair, and social assistance costs for individuals and business victims. The other severe thunderstorms that day contributed more hail, wind, and rain related losses to the total bill.

Basically the regular forecasts and watch-warning program worked well. The few radio stations with Weatheradio reacted fastest but mid-afternoon of the Friday preceding a long weekend is a poor time to reach listeners.

The heaviest workload came after the event. Supervisors up to the regional director spent the weekend and much of the next ten days answering a flood of media enquiries. With no previous experience some local commentators did not comprehend the virtual impossibility of predicting the initiatjon of an individual tornado. We were pleasantly surprised though by many positive comments that began to get publicized from other meteorologists in Canada and the United States. This attention also provided the best demonstration that Weatheradio is by far the best way of disseminating tornado warnings and updates for the major urban centres which it serves. Those commercial radio stations who monitor Weatheradio were clearly in the forefront with the warnings and updates. Sales to the other broadcast media and local emergency response centres should escalate.



Photo: Lub Wojtiw

The photo shows severe damage in an Edmonton industrial district right after the tornado hit.

Tom Taylor Tornado Hero

One of the heroes of the Edmonton tornado was Tom Taylor, a pharmacist from Leduc, Alberta about 24 km southeast of the afflicted city. Mr. Taylor had just come in from feeding his black retrievers in the kennel outside when he saw thick black rain clouds over his house. For fifteen seconds from the loft of his house which stands on an archeological site high on a hill, he saw a low hanging cloud to the southwest with a "snake-like" funnel pointing towards the ground. At the same time high winds were kicking up debris. Taylor, trained to be observant in his job (he sometimes files narcotics reports for the police), picked up the phone and called the Alberta Weather Centre informing them "things are pretty hectic right now". He told them that the cloud's funnel had just hit the ground. The time was approximately 2:55 pm. The Weather Centre, which had been expecting severe weather, immediately put out a tornado warning. Half an hour later, the full fury of the tornado pounded one of Edmonton's principal industrial districts.

Mr. Taylor spent most of his time in the loft. He didn't have time to head for the basement. But if he had to do it all over again he would have used the below ground extension phone. His wife and children were in Edmonton. They felt the full force of the tornado. Little did they know that Mr. Taylor had been the very first person to spot the tornado and report it promptly to the Weather Centre.

Naturally AES staff were delighted with Mr. Taylor's prompt action. Says AES Western Region director Brian O'Donnell "It was on the basis of Mr. Taylor's report that the tornado warning was issued for Edmonton. His quick action resulted in more warning time for the citizens of the city." Mr. Taylor has now agreed to become a volunteer under AES's severe weather watch program.

Taylor says he has been interested in weather since he was a child. He has a close friend who works with the Alberta Hail Program. He listens to weather forecasts at least three times a day and has a Weatheradio Canada receiver. "I'm a country person. Call me a farmer with a weather eye if you wish".

Two Korean Officials Visit AES

This summer two Korean meteorological officials made separate visits to AES, both to the Downsview Headquarters and to some regional installations.

First came Dr. Jong-hon Bong, director general, Meteorological Research Institute of the Korean Meteorological Service (KMS). Between June 25 and 29 he toured several directorates at AES Downsview, visited the King City Weather Radar and toured highlights of AES Pacific Region.

While visiting AES Dr. Bong expressed a strong interest in AES systems developments achieved in satellite receiving, weather radar and radiometry. He used the occasion to explore the possibility of purchasing satellite observing systems developed in Canada. He also proposed the signing of a joint Korean-Canadian Memorandum of Understanding which would include exchange of visits, consultations on satellite systems, training of Korean meteorologists and joint research in atmospheric sciences. Lastly Dr. Bong invited Mr. Ferguson and an AES duty meteorologist to visit the Seoul Olympic Games in 1988.





ADMA Howard Ferguson is seen greeting Korean visitors Dr. Jong-hon Bong and Mrs. Aesook Suh during their tours of AES Downsview Headquarters.

The second Korean visitor was Mrs. Aesook Suh, research meteorologist, Satellite Meteorology, KMS who came to Canada to familiarize herself with satellite receiving and analysis systems here.

Her itinerary included a visit to Pacific Weather Centre, to the Downsview Headquarters building, especially to the satellite receiving facilities and to the Hydrometeorology Division, to the Ice Centre in Ottawa and to the Canadian Meteorological Centre. Mrs. Suh informed AES that KMS was engaged in a major development of satellite receiving systems. She also said that KMS will shortly purchase a CRAY supercomputer.

AES to Install New, Safer Towers

Wind towers are a key part of an observational weather network. In keeping with this, AES possesses nearly 600 wind towers. Over 300 of these are 10 metres tall, and the remainder are either taller structures up to 16 metres, or shorter ones mounted on lighthouses. All seemed to be working smoothly until about three years ago when Labour Canada carried out inspections and reported that these AES towers did not conform to applicable safety codes for climbing towers.

After considering the question, AES management came up with some solutions. First they would train staff to use safety equipment when climbing existing towers. Then they would order a complete new complement of towers containing new safety devices and other innovations to make the work of observers, technicians and other AES tower users easier and more convenient. The replacement structures would meet the safety code, or would eliminate the need to climb towers to perform maintenance on the wind equipment mounted on the top. All inspectors have been trained in the use of safety equipment which will break the fall of anyone who falls while on the tower, and they are familiar with ways of rescuing people who have fallen and are suspended by a fall arrest system.

Bill Crowley of AES Implementation Division and a member of the AES Safety committee, says that "AES has an excellent safety record in climbing towers but that if an accident occurred on a tower which does not conform to the safety standards, it could be a very serious accident."

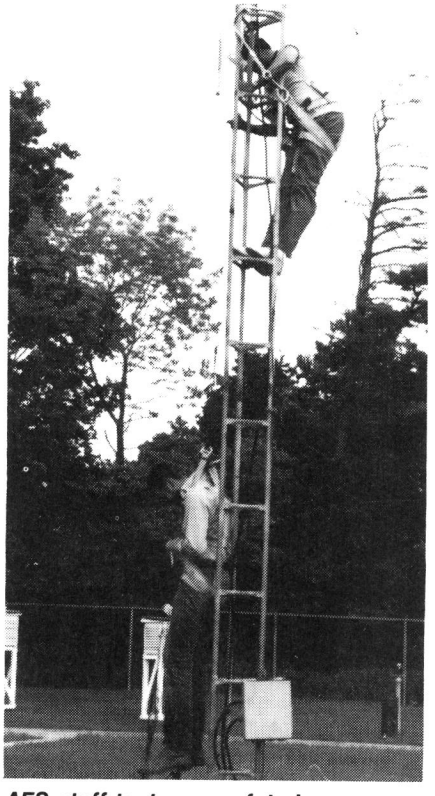
Part of the AES upgrading program will entail replacement of all existing towers by a variety of other towers. Existing equipment will be replaced by towers which permit the wind equipment to be lowered to the ground for servicing and thus eliminate the need to climb towers.

Two people are currently required if a tower is climbed, because someone is needed to rescue the climber if he falls and is suspended by a fall arrest system. By eliminating the need to climb, only one person is required.

New towers are being installed in the next three year throughout AES. Meanwhile all tower users in AES regions have been given a day-long safety course in connection with the existing equipment.



New bending tower allows instrument to be lowered to the ground



AES staff test new safety harness on standard instrument tower

How Knowledgeable are you about DOE?

Besides being membrs of AES most Zephyr readers are also part of Environment Canada. Not all AES staff, however, are equally well informed about the department they work for or the major environmental connections that this link entails. With Environment Canada assuming a clearer corporate identity these days, the time seems ripe to test your skill with a quiz. When you have finished, please look up the answers on page 8 and see how you rate as a member of the DOE team.

Test yourself with this do-it-yourself quiz. Answers and score on page

1) When was Environment Canada set up?
   a) 1914 b) 1971 c) 1981

2) Approximately how many employees does Environment Canada have?
   a) 4,000 b) 10,000 c) 92,000

3) How many national (conservation) parks are there in the Environment Canada system?
   a) 14 b) 26 c) 34

4) How many countries signed a Global agreement in Montreal to reduce industrial chemicals that are threatening the ozone layer?
   a) 15 b) 24 c) 40

5) Which country was the first to ratify the Vienna Convention for the proection of the ozone layer in June 1986?
   a) Sweden b) United States c) Canada

6) What is the value of the 1987 Wildlife Habitat Conservation stamp?
   a) $0.36 b) $2.00 c) $6.50

7) How many people worked in various locations in 1985-86 as part of the Centennial Parks Volunteer program?
   a) 5,000 b) 10,000 c) 25,000

8) Under a revamped departmental reorganization last year a new service emerged:
   a) Conservation and Protection b) Lands and Inland Waters c) Environmental Quality

9) The federal government undertook to pay the British Columbia government the following sum to save South Morseby National Park:
   a) $35 million b) $106 million c) $620 million

10) In March 1986, the Environment minister announced that lead would be eliminated from gasoline by:
   a) 1988 b) 1992 c) 2000

11) Besides the Department of the Environment Act, how many acts are administered by Environment Canada?
   a) 6 b) 11 c) 15

12) DOE's Environment Week is usually held during which month of the year?
   a) March b) June c) October

13) The new Environmental Protection Act lists all chemicals in use in Canada up to December 1986. They number:
   a) 9,500 b) 30,000 c) 124,000

14) What does PCB stand for?
   a) Precalcinated Bicarbonates b) Phosphorescent Chemical Base c) Polychlorinated Biphenyls

15) Which is Canada's largest national park?
   a) Banff b) Northern Ellesmere Island c) Wood Buffalo

The Environment, at the Heart of Energy Research

By Manon Cornellier

When Third World countries plan their energy future, they need to think hard about the environment, says *Energy Research,* a study published recently by the International Development Research Centre (IDRC) and United Nations University.

The authors, eleven researchers with the IDRC/UNU Energy Research Group, argue that developing countries must give as much priority to the environment as to social, economic and political factors in planning their energy needs.

For the Third World, they note, energy development is a vital part of overall development, energy problems go far beyond any oil crisis, and only a comprehensive approach makes sense.

Energy Research synthesizes more than 100 studies (to be published separately), presents current knowledge in the field, analyzes why research strategies succeed or fail, and selects the best of them.

Three integrating principles are proposed. Energy research:

- must be linked to research on the economy and society as a whole:
- must look at demand as well as sources; and
- must consider conservation equally important as production.

The researchers look at three major environmental problems — deforestation/desertification, acid rain, and the greenhouse effect — and call for more in-depth studies to confirm the link with energy sources.

New energy sources are important, say the authors, but they stress making better use of existing resources and finding ways to improve or replace them.

One promising path for the developing countries is undoubtedly research into energy conservation through improvements to existing, or even imported equipment.

A slight increase in the efficiency of, for example, boilers and engines can cut their consumption significantly. Using current forms of energy more frugally is often far cheaper than developing new supply sources.

But the climate must favor research, and encourage the training of researchers, information flow, independence, adequate infrastructure, relevant masterplans and appropriate funding.

The developing countries, prescribes the report, should focus on two areas: resources sensitive to market forces, and resources that are costly to use. From natural gas, through oil, solar energy and various other sources, to biomass, the possibilities are many.

Article published in Development.

November 2, 1978: A 5-day rainfall ended with amounts totalling 300 to 400 mm and producing serious flooding along the north BC coast. At Terrace mudslides broke the only natural gas line serving the area and destroyed valuable spawning grounds; residents were evacuated by boat.

AES Scientists Win Major Achievement Awards

Robert Vet, a quality assurance scientist with AES's Canadian Air and Precipitation Monitoring Network (CAPMoN) is this year's winner of the Jim Bruce Achievement Award.

At a special ceremony, held July 14, in the AES Downsview Auditorium, former ADMA Jim Bruce, now serving as director of Technical Co-operation of the World Meteorological Organization in Geneva, presented the Jim Bruce award personally to Mr. Vet.

Mr. Bruce praised Bob Vet for his outstanding contributions in the field of air pollution meteorology enabling him to help bridge the gap between atmospheric physics and chemistry in work culminating with the development of a tall stack plume dispersion model.

Mr. Bruce also praised Bob Vet for his work as consulting scientist with the Ontario Ministry of the Environment and for his activities at Concorde Scientific Corporation where he carried out wet and dry deposition studies in the Sudbury area.

Lastly Mr. Vet was lauded for representing AES, both nationally and internationally, helping to enhance global programs and contribute to Canadian efforts in negotiating transboundary air pollution agreements.

The Jim Bruce Achievement Award is given in recognition of outstanding contributions to AES and its objectives. Bob Vet is only the second person to receive the Bruce Award; Jim Bruce was the first (in 1986).

On the same occasion Bob Vet was also the recipient of an AES Merit Award. In this case the presentation was made by ADMA Howard Ferguson.

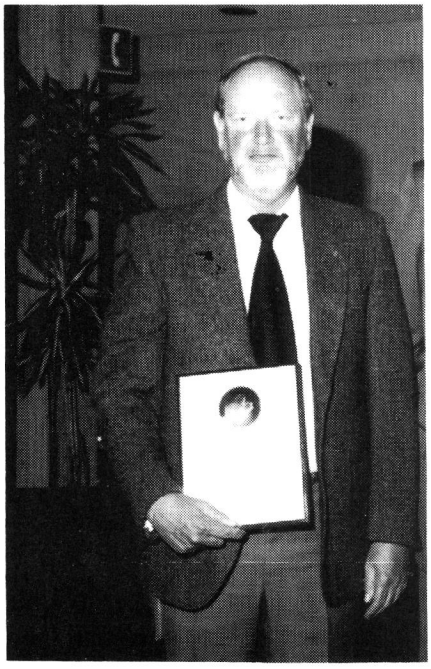
Referring to Mr. Vet's work with CAPMoN, Mr. Ferguson said, "His efforts have resulted in a state-of-the-art monitoring network equal to or better than any other in the world . . . Mr. Vet is acting as the Canadian expert advisor to a number of other international networks".

The other Merit Award recipient was John O'Reilly who received his prize in recognition of his successful establishment of Environment Canada's Great Lakes Water Level Forecast Centre and the development and implementation of the high water level forecast program.

Mr. Ferguson added that John's efforts not only led to a technical success, they also resulted in services that regularly contribute to the safety and well being of a substantial number of Ontario residents. "During the early period" concluded ADMA, "John was the forecaster, the program developer, the researcher and the trainer — a Jack of all trades — and evidently a master of them all too".



Jim Bruce, left, poses with Robert Vet soon after the latter received his J.P. Bruce Award for outstanding services to AES



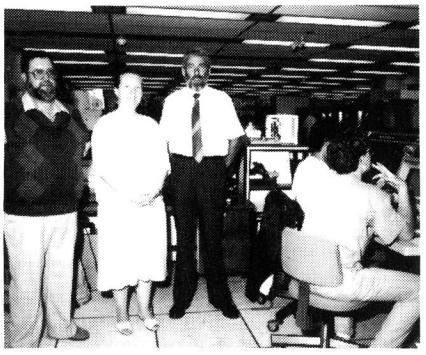
John O'Reilly receives an AES Merit Award at the same ceremony

Corrections

An announcement about the appointment of two new AES regional directors appearing in the July-August Zephyr should have read: "Brian O'Donnell and Patrick Pender have been appointed directors of AES Western and Pacific regions respectively." Zephyr regrets any confusion the original announcement may have caused.

In an article on Canada Fitness Week in the July-August Zephyr, Terry O'Connor's name should have appeared on the list of people comprising the Committee.

Satellite Data Lab Moves in With Computer



Alex Aldunate, left, Lynda Stirling and Dr. Don McKay attend transfer ceremony of satellite data equipment to the AES computer section.

All the weather satellite receiving equipment in the AES Downsview Building has been transferred from the third floor tracking station to the AS-9 in-house computer one floor above.

The object, according to Lynda Stirling, manager of computer operations for AES Downsview, is to gather all computer/communications equipment in one spot.

In the past the Aerospace Meteorology Division (ARMA) at Downsview has had both an operational and a research wing. Now it is purely a research section.

Ms. Stirling explains that the move will have definite advantages for weather satellite communications across the country. For example it will strengthen data links for weather modelling in connection with the CRAY computer at the Canadian Meteorological Centre (CMC) in Dorval, Quebec. Communications links between Downsview and the satellite tracking stations at Edmonton and Vancouver as well as with the new tracking station at the CMC will be improved.

Many AES staff in the building say they are sad to see the satellite operations lab go, but other employees regard the move as a sign of technological progress.

November 3, 1985: Remnants from Hurricane Juan slowly moved up the Mississauga Valley and reached Ontario. The storm produced many 24-hr precipitation records. Trenton recorded 60 mm of rain.

November 6, 1969: A freezing rainstorm lasting one week did significant damage to hydro lines between Québec and the new Manicouagan River power generator; 30 towers were downed.

November 7, 1969: The storm that began affecting Québec on the 6th saturated the Maritimes from the 7th until the 12th. For 144 hr, rain fell over NS, and PEI; Ingonish Beach was drenched in 364 mm of rain.



Deputy minister G.A. Sainte-Marie, middle row, centre attended an Atmospheric Management Committee meeting at AES Downsview when she visited there in June. A number of important Atmospheric Environment issues were discussed. Seen in the picture, left to right, front row; Brenda O'Connor, director, Communications Directorate, Gordon Shimizu, DG, Central Services Directorate, J. G. Coté Inter-Governmental Affairs, second row; Phil Aber, regional director, AES Ontario Region, Howard Ferguson ADMA, Ms. Sainte-Marie, Pierre Martel, DG, Policy, Planning & Assessment, Avo Lepp, director, Human Resources Branch, back row; Jim McCulloch, DG, Canadian Climate Centre, Lloyd Berntsen, director, Training Branch, Joe Boll, director, Finance and Administration Branch, Brian O'Donnell, regional director, AES Western Region, Phil Merilees, DG, Atmospheric Research Directorate.

DOE Quiz Answers

1 b, 2 b, 3 c, 4 b, 5 c, 6 c, 7 a, 8 a, 9 b, 10 b, 11 c, 12 b, 13 b, 14 c, 15 c

Score:	
14 - 15 right:	you could represent the department anywhere
11 - 13 right:	very well informed about DOE
8 - 10 right:	you know most of the basics
5 - 7 right:	your knowledge of DOE needs a little strengthening
2 - 4 right:	you may be thinking too much in terms of AES
0 - 1 right:	you are completely out of touch with the DOE

AES Helps Newspaper Win International Award

Last June Fraser Hunter, officer-in-charge, Regina Weather Office received a phone call from George Crawford, manager, Community Relations, Regina Leader Post telling him that a recent series of public service announcements (PSAs) on weather which they had worked on together during the previous six months had won the newspaper an international award.

In addition George announced that the International Newspaper Promotion Association had selected the weather PSA for publication in their promotional trade magazine.

The winning PSA headed 'You don't have to like winter to live here", was run in the newspaper's second section on December 20, 1986. Mr. Crawford later presented framed copies of the announcement to AES Regina.

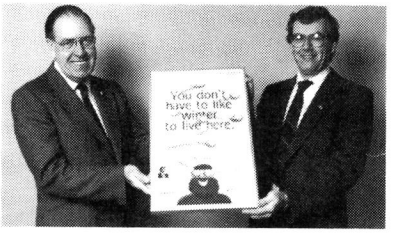


Photo: courtesy, Regina Leader Post

George Crawford of the Regina Leader Post, left, and Fraser Hunter, OIC Regina Weather Office display weather announcement.

Story of a happy retirement

By Syd Buckler

I retired early at 59. Since I had worked for six to eight years in each of Winnipeg, Edmonton, Whitehorse, Toronto and Regina, my wife and I had no strong opinions about "home". We looked at The Island, cursed the ferry service, and settled in the Okanagan valley. The best climate in Canada is found here, between Penticton and Kelowna, and I can attest to this widely held opinion.

We bought a home on the beach-front in Peachland, about halfway between Kelowna and Penticton. It had four bedrooms because we expected (and had) lots of company. The lot had 13 fruit trees which to a Prairie boy represented Heaven. In a while I had my hands full, learning that although peaches allowed to ripen on the tree were next to nectar and ambrosia, pears had to be picked when they were hard as rocks. I lost my first pear harvest learning this fact. It also took a couple of years learning how to control Codling Moths and Peach Leaf Curl. We averaged 350 lbs. of pears and 220 lbs. of peaches in the eight years we lived there. We also had cherry, apple and apricot trees. I guess this is why most of our visitors came in August and early September.

My wife was and is an avid fisher-person. I was lukewarm. When we retired we set aside $4,000 for fishing outfit. We bought a 16 foot Trihull. I priced a new outfit last summer just for curiosity and found it cost over $11,000 in 1986 dollars. The Marina operator in Peachland told us we used our boat more than any other owner in the marina. I kept a log of our success and in 13 years we have boated 2497 Kokanee. Kokanee are landlocked salmon and generally grow to 9 to 13 inches. We have also caught Rainbow Trout and Ling Cod, but pan-fried Kokanee beats trout anytime. I did catch a 24-inch Kokanee one summer and it was the largest reported that year. It won me an $80.00 fishing rod and reel!

I got into "wine making". I made wine from peaches, cherries and grapes, about 20 gallons a year. One time when Rudy and Trudy Triedl were visiting, they praised my dry red so fulsomely that I was encouraged to enter samples in the Peachland Fall Fair. I won two ribbons, a second for dry white and a third for dry red. Then I ventured to the Summerland Fair. There my red came third again and my 1980 Riesling was judged "Best in the Show".

In moving from one city to another I had never put down roots enough to accept any civic responsibility (except on curling club executive, of course). But in Peachland I went to the town council and offered my services. I ended up as Peachland Observer at the Okanagan Basin Water Board, on the Regional Planning Advisory Committee, and the Airport Advisory Committee. Lastly I chaired a committee to rebuild our curling rink, but in 1979 the town council called me to appear at a regular meeting. They had decided to reinstate a previous custom of recognizing a Citizen of the Year, and I was presented with a silver tray as the 1978 Citizen.

We used our home, nearby motels, and campgrounds to arrange a Buckler family reunion in 1974, so successful that we repeated a few years later. Then we spend two years arranging an Archibald reunion for Phyllis' side of the family. This was attended by over 60 relatives. We had to hire the Town Hall for the banquet.

We both bowl five-pins, Phyllis twice a week and I, once. I curled steadily, as many as 80 games a winter, until two years ago. I quit while still at my peak form and took up swimming. I now swim a mile at a time, twice weekly, sometimes three times a week.

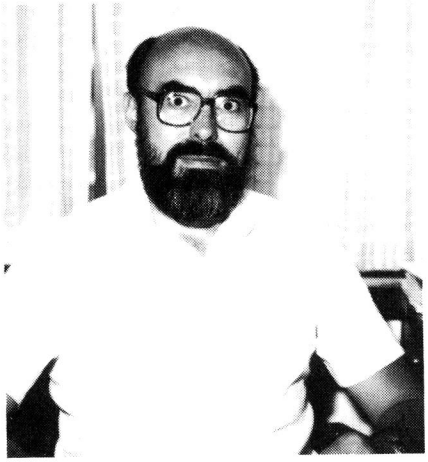
For 1981 we sold our Peachland home and moved into Kelowna. This was partly because I was tired of looking after the ranch, and partly because we were tired of driving into Kelowna to bowl, curl, attend church, hospital, etc. We purchased a condo unit, actually 3-bedroom penthouse with a wonderful view. I have been chairman of the Strata Council here for four years now. This was a learning experience for me and eventually I conducted six programs on Condominium Living on our local cable channel.

So you see retirement has been a busy and rewarding period in my life. Let me emphasize that retirement is a partnership affair. The saying that "a retiree's wife gets twice as much husband for half as much pay" is at least partly true. There have been no financial problems. We have had far more disposable income than at any time previous to retirement.

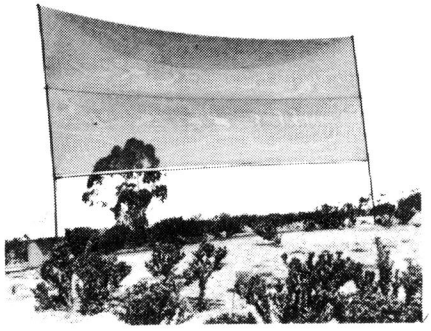
Syd Buckler is a retired AES meteorologist.

AES Scientist Draws Drinking Water from Fog in the Andes

We believe that AES research scientist Bob Schemenauer's expedition to northern Chile to conduct experiments in extracting drinking water from high altitude fog to be a unique project in a water-short world. Until now Dr. Schemenauer has received very little publicity for his work and it may interest readers to know that his work site is only about 100km away from the work-place of another key Canadian scientist, Ian Shelton discoverer of the first supernova in 383 years. Making the discovery from a small observatory at Las Campanas, Shelton took advantage of the same clear, dry atmosphere that Schemenauer used for his drinking water experiments.



Bob Schemenauer



This 40 m² nylon mesh fog water collector is installed on a ridge in northern Chile.

On October 25, Dr. Robert S. Schemenauer, a physicist in the Cloud Physics Research Division (ARPP) flew down to Chile to conduct a project that wrings drinking water from fog.

In a world increasingly threatened with water shortages, Bob's project is aimed directly at an economic target — to produce water from fog in sufficient quantities to promote habitation and cultivation in arid locations. Northern Chile is very arid — at Arica, in Chile's farthest north, annual rainfall is 0.7mm, one of the most arid spots on the face of the earth. But northern Chile has lots of fog, and the concept of extracting water from this fog has been around for many years.

The high elevation fogs of northern Chile are called camanchacas. They are created by northern Chile's prevailing weather. Bob explains — "In the northern third of Chile and Peru, the weather is dominated by the Pacific anticyclone throughout the year. This produces a light southerly or southwesterly flow in the lower kilometre of the atmosphere and results in a stratus or stratocumulus cloud that extends a few hundred kilometres out over the ocean." The clouds form and drift in from over the ocean and envelope the coastal mountains. These camanchacas are a potentially rich source of water.

The site selected for Camanchaca Project is an old abandoned iron mine called El Tofo beside a little village 60 km north of the city of La Serena (population 90,000). The El Tofo area is "arid and rocky with a sparse coverage of cacti and shrubs". Rainfall is less than 100 mm a year and so the village must truck its water in. El Tofo is 5 km from the coast and 780 m above sea-level. Experiments have shown that 600-800 m is the best height at which to intercept the camanchaca.

El Tofo is therefore an ideal location to test the economic targets of the Camanchaca Project. It has plenty of fog more or less year round and this fog has the essential quality of being pollution-free. Bob's background in cloud physics, cloud chemistry and in operating the chemistry of High Elevation Fog (CHEF) project in Quebec make him ideally suited to play a major role in this project.

Can the project provide El Tofo's neighbouring village with water from fog more cheaply than it can be trucked in? Can it provide water in an abundance sufficient to irrigate the surrounding terrain and promote the growth of Chile's rural areas? The villagers, for economic reasons, truck in just enough water to meet their minimum daily requirements.

Bob mentions that on the small summit above El Tofo "is an anomalous grouping of eucalyptus trees" planted by the iron miners to provide shade many years ago. The miners kept the trees watered until they were 2 m tall, at which point the trees were able to extract their own water from the surrounding fog. The trees are now 10 m tall — and demonstrate what can be done for the entire terrain if adequately supplied with water.

The technique for collecting water from fog is simple and effective. It consists of nothing more than a broad rectangle of cheap, locally available nylon mesh stretched out between two wooden poles stuck in the ground. A flow of air has a tendency to evade and flow around solid objects. This is why the nylon cloth is a mesh. The interstices in the mesh allow the air to pass through. It leaves the strands of the mesh beaded with tiny drops of water. These merge into each other and form drops heavy enough to trickle down the strands of the mesh into the trough that forms the bottom boundary of the mesh. In a very dense fog, this mesh will drip water at the rate of 10 litres of water per square metre per day.

The Camanchaca Project will set up about 60 of these nylon meshes, each one containing 40 square metres of material. Most will be set up on a small summit between two major peaks.

The water-from-fog concept in Chile has been under study for some time. Dr. Schemenauer's colleagues are Humberto Fuenzalida, University of Chile, and Pilar Cereceda, Pontificia Universidad Catolica de Chile. In their joint paper "A Neglected Water Resource: The Camanchaca of South America", they cite references dating back to 1966. A lot of meteorology, climatology, physics and other sciences have provided the practical pre-conditions for the Camanchaca Project.

It is not simply a case of going to El Tofo and setting up those meshes. Relevant meteorology must be studied concurrently. The annual harvest of water must be accurately computed. The engineering of the pipes and reservoirs for the water must be completed — and the costs of all this must be itemized to deliver a substantial estimation of the viability of the scheme. "A Neglected Water Resource" deals in detail with all aspects of the scheme.

The crew at the El Tofo site will include about 15 people — some of them Chilean university students. Present also will be two AES technicians from ARPP — Mohammed Wasey and Richard Poersch. They have packed up and shipped down some of AES's most advanced cloud physics and atmospheric sounding instruments and will be responsible for much of the on-site instrument operation.

Bob was also centrally involved in arranging the funding of the Camanchaca Project with the International Development Research Centre (IDRC) and acts as a liaison between the Chilean groups and IDRC in Ottawa.

Once the engineering aspects of the Camanchaca Project have been completed, the equipment can be operated and maintained by the villagers themselves.

Optimistically, if the project is a practical success, it will be the paradigm for similar projects world-wide, wherever there is a combination of aridity, mountains and clean fog.

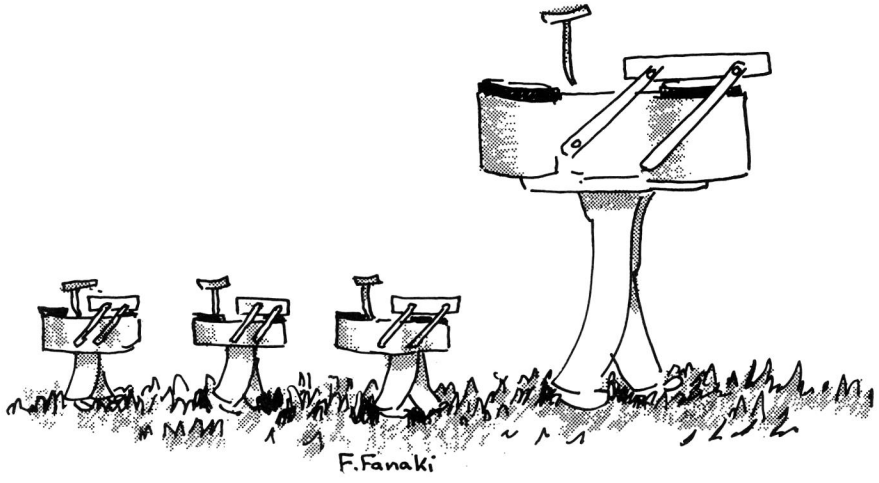
November 15, 1983: A week of heavy rain in SW coastal British Columbia, resulted in Vancouver's water supply turning murky, the scenic highway to Squamish closing due to mud slides and several bridges washing away.

November 17, 1985: Heavy snow fell for most of the week across Labrador. By the 17th, 100 cm of snow had fallen. In a 2-day period Goose Bay exceeded its normal monthly total of 57 cm. Strong winds above 100 km/h disrupted the P.E.I. ferry service.

November 19, 1985: A blizzard swept across southern Manitoba, dumping 20 cm of snow. Winds of 60 km/h piled snow into deep drifts. In many rural areas school buses did not run because of whiteouts. Clean-up costs in Winnipeg alone exceeded $1.5 M.

ZEPHYR BREEZES

Plans are going full speed ahead to set up a special weather office for the Olympic Winter Games, Calgary 1988. Located at Calgary International Airport in a special building extension, the weather office will be staffed by 14 AES meteorological personnel. After a week's on-site training the olympic weather forecasters will become fully operational with 24 hour a day service during the period of the games, February 13-28. In addition to normal weather information, the office will provide specially tailored data on wind speed, temperature, precipitation (hopefully snow) and above all skiing conditions. The forecasts will be for all of the Olympic corridor from Canada Olympic Park near Calgary to the Canmore Nordic Centre near Banff. In charge of AES olympic weather services is Andre Lachapelle, who was a special forecaster at the 1984 Olympic Games in Los Angeles. The AES olympic coordinator is Bruce Thomson of Edmonton.



***"A new generation of samplers."* (Cartoon taken from the Air Quality Annual Report 1986-87).**



Under the watchful eye of Raoul the owl, Joyce Montagnese, Work Experience Coordinator for York Region Board of Education displays the Certificate of Appreciation she has just presented to Lloyd Berntsen, head of AES Training Branch, Downsview.

The award was a way of saying thank you to AES for giving temporary employment to two trainable retardees. One worked in the Central Services Directorate administration; the other in the Canadian Climate Centre.

Ms. Montagnese said that thanks to their AES work experience, the two students were now working full time in a store. Both had attended integrated schools in York Region close to Metropolitan Toronto.

There have been non-AES services in the Downsview Headquarters before but these have mostly tied in closely with AES operations. Now for a limited time only, office space has been given over to an environmental organization, so high up in the pecking order, it has little day-to-day contact with AES. The Canadian Council of Resource Ministers (CCREM) has moved from its mid-town Toronto Headquarters. According to executive director Richard Barrens, CCREM deals with a wide range of national and regional environmental issues.

Most recently CCREM has been involved with the National Task Force on Environment and Economy dealing with government policy on such matters as acid rain, forests and fisheries. CCREM also warns that Canada's economy is being put at risk by bad environmental decisions. The report was released at CCREM's annual meeting in Quebec City September 21-24. All provinces are represented on CCREM.

November 21, 1906: A storm packing 100 km/h winds sank a steam barge, The Resolute, off Toronto Island; 6 lives were lost.

November 22, 1984: A vigorous Pacific storm lashed the North Coast with winds in excess of 120 km/h and rainfalls of 100 mm. Terrace received more than 80 mm of rain in a 24-hr period.

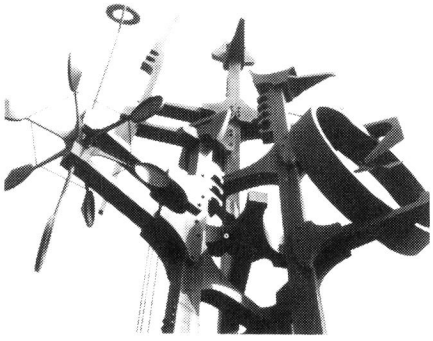


Here is some late Environment Week news:
Hydrometeorology Research Division of the Canadian Climate Centre in Saskatoon held two "Laboratory Afternoons" between June 1 and 7. Participants were students in Water Resources Technology. In addition the National Hydrology Research Centre held a Visitors' Day in which AES participated.
Some 500 people attended during the day. The young family in the photo are viewing weather radar. Standing by to explain are Division staff Kristen Darlington (centre) and Don Bauer (right). In addition, Rick Lawford gave a slide presentation on Weather, Climate and Water Resources.

On page 4 in connection with the Edmonton tornado we mentioned the great resourcefulness of Mr. Tom Taylor who was the first to report the deadly funnel cloud and who subsequently enrolled as an AES severe weather volunteer.

Communications Directorate recently asked other AES regions whom they thought were outstanding volunteers in their areas. Two names come to mind. AES Atlantic Region mentioned Huntley Dingwell who is both an AES climate and severe weather observer. (He received a 15 year Achievement Certificate last year and it was noted that he was one of the few volunteers to type their reports). In addition Mr. Dingwell received a special Governor General's medal in 1966 after 30 years voluntary involvement with the New Glasgow fire department in addition to the temperature and precipitation readings he does for AES, he also takes wind readings with his own anemometer. Finally he is a CB radio enthusiast and has interests in woodworking and coin collecting.

AES Pacific Region mentions the volunteer work of Brother Maurus de Klerk, a member of the Seminary of Christ the King located at Westminster Abbey, Mission. AES regional director Pat Pender says that Brother Maurus is reponsible for the upkeep of the grounds and has performed daily observing duties regularly since the climate station "Mission West Abbey" opened in October 1962.



Even at this unusual angle — it's easy for most AES people to guess that this is a photo of the weather statue outside the AES Downsview Headquarters building. The picture was taken by Mike Duffy who also took the photo of the launching of the ozone sonde balloon on the front page of the July/August issue.

July 4, 1980: Vancouver A established its all-time November maximum: 18.4° (48 yrs.)

November 5, 1975: The Winnipeg temperature of 23.9° was the highest November reading on record (113 yr).



Seen in the above photo Hans Teunissen, left, DOE Departmental coordinator, Greater Metro Toronto, Deedee Davies, publicity coordinator, Karl Vanek, Special Events coordinator, some of the many AES employees who attended the 1987 Federal/Provincial United Way Campaign Kick-off at Queen's Park on September 25.

A hydrological engineer from Ecuador arrived at AES Downsview last month minus papers, minus money, minus a knowledge of English and without any advance warning of his visit. P.T. Louie of the Hydrometeorological section of the Canadian Climate Centre hastily took over the accommodation and banking arrangements for the visitor and set up a tour of automatic weather stations in the Central Services Directorate part of the building. But it was soon found that the success of the tour depended on the urgent recruitment of a Spanish-English interpreter. These services were provided by a member of the AES Communications Directorate.

After leaving Downsview the hydro engineer left for a visit to Inland Waters in Ottawa. While in the Nation's Capital, he had the full-time services of an External Affairs interpreter.

November 20, 1981: Major storm approached Nova Scotia on the 20th bringing record rainfalls of 58.1 mm (21.4 mm in 1 hour) to Shearwater. A large gain freighter went aground necessitating helicopter rescue of 26 crewmen off Sable Island.



During a visit to the Meteorology Training Centre (MTC), TCTI, Cornwall, on September 2, Howard Ferguson, ADMA took time to recognize two sigificant achievements.

With the full staff of the MTC as his audience, Mr. Ferguson presented Doug Tesch with a Long Service Medal, recognizing the more than 36 years Doug has spent in forecast operation (with AES and DND) and in Training Branch.
Mr. Ferguson's second presentation was made to Ken Morris representing the staff of the MTC. This presentation was in the form of an AES Achievement Award earned by the staff "for the dedication and initiative displayed in developing a new program of meteorological training." Over the last 18 months Centre staff redesigned and re-developed 80% of the AES technical training program and all of the associated course materials. This was achieved while maintaining the ongoing training program at normal levels.
Shown in the photo are, left to right; Francis Bowkett, chief of Technical Training, Ken Morris, A/superintendent of MTC, Doug Tesch, Howard Ferguson, and Lloyd Berntsen, director of Training Branch.

Postes temporaires ou intérimaires/ Temporary or Acting Positions

D. C. McKay (SM) Chef/Chief. ARMA, Downsview, Ont.

C. Yim (ST-SCY2) Secrétaire/Secretary, CMCF, Dorval, Qc/Que.

J. Boulais (CS-1) Programmeur/Programmer, CMCOA, Dorval, Qc/Que.

G. Jacob (AS-7) Cons. sup. des programmes/A/ Senior Policy Advisor, A/APPA, Hull, Qc/Que.

S. Roy (MT-6) Météorologiste/Meteorologist, QAES, St-Laurent, Qc/Que.

J. Brunet (CS-2) Analyste de systèmes programmeur/Systems Analyst Programmer, AWSC, Downsview, Ont.

P. Madhavan (CS-3) Superv. systèmes informatiques/Supervisor, Computer Systems Support, AWSC, Downsview, Ont.

G. Shaw (EG-4) SSD, Bedford, N.-É./N.S.

J. How (EG-5) Responsable/OIC, SM3/WS3, Cape St. James, C.-B./B.C.

J. Beal (EG-3) Techn. en aér./U/A Tech., SM2/ WS2, Port Hardy, C.-B./B.C.

D. Wilson (DA-PRO-3) Communications informatiques/Comp Communications Operator, OSD, Downsview, Ont.

C. Georgopoulos (DA-PRO-2) Contrôleur junior de la product./Jr. Prod. Controller, ACPO/IO Downsview, Ont.

D. Evans (CM-5) Agent de communication/Communicator, NWC, Gander, T.-N./Nfld.

J. Samson (CS-2) Programmeur/Programmer, CMCOT, Dorval, Qc/Que.

L. Bergeron (CS-1) Programmeur/Programmer, CMCFT, Dorval, Qc/Que.

G. Gregorian (CS-2) Programmeur/Programmer, ACPP, Downsview, Ont.

D. Smith (CR-2) Commis/Clerk, ACTD/AS, Downsview, Ont.

R. Massaroni (AS-7) Télécom., conseiller special/Special Advisor Telecommunications, AWPD, Downsview, Ont.

M. Richling (CS-2) Programmeur/Programmer, AWSC, Downsview, Ont.

R. Huibers (EG-7) Responsable/OIC, SM1/WS1, Eureka, T.N.-O./N.W.T.

I. Kwain (CS-1) Programmeur/Programmer, ARMA, Downsview, Ont.

R. Carbone (DA-PRO-5) Coordinateur de quart/ Shift Supervisor, CIDO, Dorval, Qc/Que.

P. Paul (DA-PRO-5) Coordinateur de quart/Shift Supervisor, CIDO, Dorval, Qc/Que.

B. McLeod (CS-3) Analyste Programmeur/Program Analyst, CIDX, Dorval, Qc/Que.

C. F. MacNeil (SM) Chef/Chief MAEW, Bedford, N.-É./N.S.

Départs/Departures

V. Sakellarides, AAGF, Downsview, Ont. — Treasury Board, Ottawa, Ont.

K. Garrison, AAFS, Downsview, Ont. — DND, Downsview, Ont.

G. Tatarin, Gest. rég. du personnel/Regional Personnel Mgr., Edmonton, Alb./Alta.

D. Wood, SM1/WS1, Sachs Harbour, T.N.-O./ N.W.T.

L. Brouillette, QAEOO, SM3/WS3, Ste-Agathe, Qc/Que.

W. J. Silk, AHRS, Downsview, Ont. — American Motors Ltd., Brampton, Ont.

P. Berthelot, SM1/WS1, Shelburne, N.-É./N.S.

G. Leger, SM1/WS1, Sable Island, N.-É./N.S.- Université/University

O. Peczeniuk, Acquisition des données/Data Acquisition, Vancouver Harbour, C.-B./B.C.

S. Tsang, ACPB, Downsview, Ont., Secteur privé, É.-U./Private Sector, U.S.A.

L. Lanctin, NWC, Gander, T.-N./Nfld.

Y. Lamontagne, QAEOU, SM1/WS1, La Grande IV, Qc/Que.

K. Pavasars, OAEM, Toronto, Ont.

R. Gabison, ARMF, Downsview, Ont.

B. Benwell, CID, Dorval, Qc/Que.

H. Yang, CMC, Dorval, Qc/Que. — SBSC/HWC, Ottawa, Ont.

Congés autorisés/Leave of Absence

R. Picard, QAEOU, SM1/WS1, Maniwaki, Qc/ Que.

R. Shaw, ARMF, Downsview, Ont. — Austria

R. Jessup, ARMF, Downsview, Ont., Congé d'études/Education Leave

R. Branner, BM4/WO4, Yarmouth, N.-É./N.S. Formation linguistique/Language Training

Retraites/Retirements

R. H. Robinson, CMCO, Dorval, Qc/Que. Mai/May 1987

A. Gamelin, CMCFT, Dorval, Qc/Que. Mai/May 1987

G. Wood, BM4/WO4, Prince George, C.-B./B.C., Juin/June 1987

G. Lamer, CMCFT, Dorval, Qc/Que., Juillet/July 1987

J. Hawkins, MSRB, Downsview, Ont. Juillet/July 1987

R. Mackenzie, Halifax, N.-É./N.S., Juillet/July 1987

A. Gladstone, CMCFA, Dorval, Qc/Que., Août/ Aug. 1987

L. Ward, WAED, Edmonton, Alb./Alta., Août/Aug. 1987

J. Paschold, BM4/WO4, Vancouver, C.-B./B.C. Août /Aug. 1987

C. Demeurie, CMCA, Dorval, Qc/Que., Sept. 1987

F. Yates, ACPP, Downsview, Ont., Oct. 1987

Décès/Deaths

J. Greenly, SM3/WS3, Coronation, Alb./Alta., Juin/June 1987

ZÉPHYR

Environnement Canada | Environment Canada

Service de l'environnement atmosphérique

OCTOBRE/NOVEMBRE 1987

Reportage spécial sur la tornade d'Edmonton

La tragique tornade survenue le 31 juillet 1987 à Edmonton est la pire qu'ait connue la ville pendant 97 années d'observations. On a compté 27 morts et estimé les dégâts à 250 M $. Depuis lors, on a rédigé plusieurs rapports gouvernementaux. Celui que nous avons sélectionné pour les lecteurs et lectrices de Zéphyr est un compte rendu établi par Garry Atchison, le prévisionniste des phénomènes météorologiques violents en service pour la journée.
M. Atchison est, depuis 23 ans, météorologiste supérieur au Service météorologique et travaille depuis 1980 au Centre météorologique de l'Alberta.

Les dix derniers jours de juillet 1987, furent excessivement chaud et humide en Alberta. On établit des maximums absolus, de 31 à 37°C, à plusiers emplacements. Le point de rosée, mesure fondamentale de l'humidité, se situant en moyenne à 10 degrés en Alberta pendant l'été, atteignait 17 à 21 degrés pendant la dernière semaine de juillet. Le Centre météorologique de l'Alberta avait émis des veilles et des avertissements d'orages violents presque tous les jours pour quelque région de la province. Les rapports ultérieurs sur les dégâts ont confirmé la formation quotidienne de ces tempêtes: vents destructeurs, gros grêlons, pluies torrentielles, niveaux records d'éclairs.

Le jeudi 30 juillet, deux bandes d'orages violents se formèrent en fin de journée et traversèrent la région d'Edmonton, la première bande touchant la ville, la seconde passant au nord pendant la nuit. Le système de détection des éclairs enregistra, par jour, plus de 40 000 décharges des nuages au sol, chiffre constituant un nouveau record. On prit des dispositions pour effectuer, la charge de travail du vendredi le permettant, une vérification personnelle d'un rapport de dégâts par tornade émanant d'un observateur établi à une centaine de kilomètres d'Edmonton.

Le vendredi au matin, on avait mis fin à toutes les veilles et à tous les avertissements. Le ciel était pratiquement dégagé. Au moins un annonceur de radio se moqua de la prévision de 5 heures du matin, qui annonçait une probabilité de 80 p. 100 d'"orages et, parfois, de gros orages". Après avoir pris la relève à 7 heures, l'équipe du jour, qui comprend le prévisionniste des phénomènes météorologiques violents, envisagea la possibilité que la menace ne soit passi grave, car les températures de surface et les points de rosée étaient plus bas et la configuration des nuages sur la Saskatchewan suggérait que la masse plus dangereuse d'air tropical s'était déplacée vers l'est, c'est-à-dire que les phénomènes du jeudi étaient liés à un front froid faible. Toutefois, l'analyse détaillée usuelle de l'état actuel de la stabilité atmosphérique indiquait qu'il restait de bonnes possibilités d'orages violents.

Les modèles informatiques semblaient rationnels : ils poussaient un creux supérieur qui se refroidissait dans le sud de l'Alberta en fin de journée. De ce fait, le courant-jet à haute altitude, au-dessus de la C.-B. en début de journée, se retrouverait sur une axe sud-nord dans le centre de l'Alberta en soirée.

A la consultation de l'équipe de prévision de 10 h 15 du matin, on confirma la prévision d'orages pour la plupart des régions, notamment des risques d'orages violents dans une vaste zone, de la région sud-est de Peace River à Medicine Hat, y compris Edmonton, Red Deer et Calgary.

Vers 11 h 15, des signaux sonores émis du dispositif de détection des éclairs confirmèrent qu'il s'était formé des orages au-dessus du sud des Rocheuses. On émit une veille de phénomènes violents pour les régions de Calgary et de Red Deer.

Comme les éclairs se formaient vers le nord et que les radars météorologiques et les images satellitaires confirmaient la formation de cumulonimbus orientés dans l'axe NNW-SSE au-dessus des contreforts situés au nord de Sundre, on se mit de plus en plus à croire que les orages violents prévus plus tôt allaient se concrétiser.

Les courants de vent à basse altitude formaient de plus en plus un courant du sud, mais le radar indiquait un mouvement de cellules à partir d'une direction sud-sud-ouest et d'une vitese étrangement élevée, 60 à 70 km/h. Elles atteindraient donc la proximité d'Edmonton.

Vers 13 h 40, les échos radar montrant des sommets s'approchant de 10 km et une puissance soutenue d'échos à la seconde valeur la plus importante, on étendit la veille météorologique à Edmonton et aux régions adjacentes.

Vers 14 h 45, la vitesse s'étant accélérée jusqu'à 80 km/h et les sommets montant jusqu'à 12 km, on estima qu'il s'agissait d'une cause suffisante pour convertir la veille en avertissement d'orages violents pour la ville d'Edmonton et les comtés situés au sud et à l'ouest.



Photo: Rob den Hartigh

Photo d'un énorme nuage en entonnoir prise du toit de l'immeuble d'Edmonton qui abrite le Centre météorologique régional du SEA.

Dans le numéro de mars: Les Olympiques d'hiver de Calgary!

Suite à la page 4

Canada

Le SEA et le MAIN signent un grand accord de formation

Le 24 août, à Ottawa, l'ADMA Howard Ferguson et Don Allen, sous-ministre adjoint du développement économique au ministère des Affaires indiennes et du Nord (MAIN), ont signé un protocole d'accord (PA).

Il s'agira du premier accord national de formation en cours d'emploi tant pour Environnement Canada que pour le MAIN. Il s'ensuivra le recrutement, par le SEA, d'environ 12 techniciens météorologues autochtones dans l'ensemble des Régions du SEA.

Du fait de cet accord, le SEA, augmentera d'ici la fin du programme, le nombre d'autochtones travaillant comme observateur météorologiques (EG-ESS). En attendant, le MAIN réalisera ses objectifs qui consistent à améliorer l'emploi et les possibilités de gain des travailleurs indiens et inuit.

Le projet comporte cinq phases. La phase I, maintenant terminée, comprend la sélection des candidats par les agents régionaux de recrutement du SEA à partir de l'inventaire du MAIN. On s'était proposé de choisir 16 recrues provenant des diverses régions.

Au cas où plus de 12 personnes auraient terminé la formation, on créerait des postes supplémentaires. Les recruteurs ont évalué les candidats d'après ces critères: aptitudes linguistiques, études secondaires terminées avec succès avec de bonnes notes en mathématiques et en physique, mobilité, et réussite au test d'aptitude de recrutement des techniciens météorologues.

La phase II, en cours, consiste à envoyer toutes les recrues à un bureau ou à une station météorologique proche de leur domicile. Leur fonction consistera à participer à l'exploitation quotidienne, sous la supervision du personnel du SEA. Les recrues essaieront de se familiariser avec les méthodes et de contribuer à l'exercice des fonctions d'observation météorologique. Cette phase se termine par une évaluation des candidats dans le domaine des qualités personnelles.

La phase III (du 20 novembre 1987 au 19 février 1988) permettra aux personnes qui ont réussi aux essais de qualités personnelles de suivre le cours d'entretien et d'observation météorologique de surface (SWOM) à l'Institut de formation de Transports Canada (IFTC), situé à Cornwall (Ontario).



Don Allen, sous-ministre adjoint de Affaires indiennes et du Nord, et Howard Ferguson, sous-ministre adjoint au SEA, signent le protocole d'entente.

La phase IV (du 22 février au 1er avril 1988) commence quand des diplômés ayant réussi audit cours retournent chez eux pour une affection destinée à les préparer à une autre formation à l'IFTC et à évaluer leur qualification pour un emploi à plein temps au SEA. Les fonctions comprendront la participation au programme de veille météorologique des stations, la prise sans supervision d'observations météorologiques de surface, l'entretien des affichages et des instruments météorologiques.

La phase V (du 4 avril au 17 juin 1988) commence quand les stagiaires, après une autre évaluation, suivent le cours de qualification des techniciens en météorologie à l'IFTC. Parvenus à cette étape, les stagiaires sont en situation de formation au SEA.

Le coût du projet sera partagé entre le SEA et le MAIN.

Brenda Smith, du bureau du directeur général à la Direction générale des services météorologiques, qui occupe le poste d'agent national de liaison du programme de formation en cour d'emploi, a déclaré ceci à Zéphyr: "tout semble très bien aller, les recrues suivent maintenant leur formation initiale dans les Régions."

L'infirmière Maudrie prend sa retraite

Pour ce départ à la retraite, ce ne fut pas un rassemblement ordinaire.

Quand cet été, un certain après-midi, Maudrie Crichlow, infirmière de Santé publique au SEA-Downsview pendant les cinq dernières années, s'assit avec "quelques amis et amies" pour prendre le thé dans la salle du conseil de la Direction générale des services centraux, des employés venus des quatre coins de l'immeuble s'entassèrent pour faire leur adieux à une infirmière très appréciée.

Joe Boll, directeur des Services administratifs, remercia officiellement Maudrie au nom du SEA et lui remit un cadeau. Mais des douzaines d'autres personnes lui présentèrent leurs voeux à titre officieux. Et quel festin, ce thé, avec ce gâteau du départ. Maudrie est née à la Trinité, où elle fit ses études. Après son diplôme d'infirmière agréée, elle passa huit années à travailler dans des hôpitaux de cette île. Puis, en 1954, elle émigra en Angleterre, où elle suivit une formation pour devenir une infirmière agréée britannique. Elle travailla ensuite pendant plusieurs années dans des hôpitaux de Londres.

En 1969, Maudrie émigra encore une fois, cette fois-ci au Canada. Après des études menées pour passer infirmière agréée canadienne, elle travailla au North York General Hospital et, en 1971, entra au service de Santé et Bien-Être social Canada. Sa première affectation fut dans la Terre de Baffin (T.N.-O.)

De retour à Toronto après deux ans, Md. Crichlow fut affectée au ministère des Postes, au bureau régional de Santé et Bien-Être social, au bureau d'impôt de Toronto et aux Services gouvernementaux dans un grand immeuble fédéral à North York. Elle vint travailler au SEA en 1982.

A la cérémonie, Maudrie a déclaré à l'assistance qu'elle s'était vraiment sentie chez elle au SEA-Downsview et que, pour elle, les employés y faisaient un peu partie de sa famille. Et de conclure: "Je regrette d'être venue ici si tard dans ma carrière."



Maudrie Crichlow coupe le gâteau qui marque le départ à sa retraite.

Le SEA à la conférence mondiale sur l'ozone

Le 16 septembre, 24 nations ont signé une entente historique pour protéger la couche d'ozone. Environnement Canada fut fier de jouer un rôle capital tant dans l'établissement que dans la signature définitive de ce document. Dans la première entente de cette sorte, les nations participantes se sont engagées à réduire les produits chimiques industriels qui menacent la couche d'ozone de la terre. Cette couche fragile de gaz de la haute atmosphère nous protège contre les effet nocifs des rayons ultraviolets du soleil, y compris le cancer de la peau et les pertes de récolte.

Cette entente fut signée à Montréal, à une conférence diplomatique tenue par Environnement Canada sous les auspices du programme des Nations Unies pour l'environnement. M. Tom McMillan, ministre de l'Environnement, a signé l'entente pour le Canada. M. Alex Chisholm, de la Direction de la recherche du SEA-Downsview, fut un représentant clé de la délégation canadienne en fournissant des compétences scientifiques sur la couche d'ozone. Pendant plus de cinq ans, M. Chisholm, ainsi que Vic Buxton, de la Conservation et de la protection, et que John Allen, des Affaires extérieurs, ont constitué une équipe canadienne qui a joué un rôle capital dans les longues négociations internationales ayant abouti à l'établissement de l'entente définitive.

Réunissant plus de 200 délégués venant de 62 pays et plus de 100 membres des médias, cette conférence remporta un grand succès. Les participants du SEA comprenaient Wayne Evans, Jim Kerr et Lewis Poulin, tous de la Direction de la recherche à Downsview. Ils ont tenu un kiosque qui présentait des instrument de haute technicité du SEA et ont informé le monde entier de nos programmes de recherche sur l'ozone.

ZÉPHYR

ZÉPHYR est une revue du personnel destinée aux employés du Service de l'environnement météorologique d'Environnement Canada. Il est réalisé par la direction générale des Communications du Ministère.

Veuillez adresser toute lettre ou tout élément d'article à: ZÉPHYR, Service de l'environnement atmosphérique, 4905 Dufferin Street, Downsview, Ontario M3H 5T4.

Rédacteur en chef : Gordon Black
Assistante à la Rédaction : Darlene Lavigne
Assistants photo : Bill Kiely, Joan Badger
No de tél.: (416) 667-4551

Environnement Canada | Environment Canada

Service de l'environnement atmosphérique | Atmospheric Environment Service

Les services météorologiques maritimes dans la Région de l'Atlantique

La Région de l'Atlantique du SEA comprend tout ou partie de cinq provinces, compte près de 20 000 km de littoral, subit un des temps les plus tempêtueux de l'hémisphère ouest et accueille les flottes de pêches de plusieurs nations.

L'autre grand littoral commercial du Canada, la côte de Colombie-Britannique, est d'une longueur moins importante que le littoral est et, à bien des égards, est moins compliqué. Par exemple, il n'englobe qu'une province, est d'une longueur globale atteignant peut-être 2 000 km et ne présente pas de problème de glace.

Dans les Régions de l'Atlantique et du Pacifique, on est conscient de l'importance de bonnes et précises prévisions météorologiques maritimes. Ces deux régions ont eu leur part d'accidents maritimes liés au temps, du sinistre de l'Ocean Ranger au large de la côte de Terre-Neuve en 1983 aux nombreux accidents de bateaux de pêche du Pacifique. Mais, du fait du rapport LeBlond, c'est la Région du Pacifique qui a bénéficié jusqu'ici de la majeure partie des ressources et des années-personnes pour améliorer ses services météorologiques maritimes.



Jim Abraham, à gauche, et Peter Bowyer étudient de près des cartes au poste météorologique de fortune installé au Centre météorologique de la Région atlantique.

Pour le personnel des Centres météorologiques des Maritimes et de Terre-Neuve, c'est inquiétant. A l'heure actuelle, ces deux centres ne disposent pas de spécialiste en temps maritime. Mais, quand vous êtes en seconde position, vous redoublez d'efforts!

Maintenant, déclare Jim Abraham, superviseur du Centre météorologiques des Maritimes (CMM), la Région de l'Atlantique est fin prête à étendre ses services dans plusieurs directions, afin de mieux comprendre le temps maritime et côtier et d'être plus à même de le prévoir d'une façon exacte.

Par exemple, le CMM a été désigné Centre des ouragans du Canada. Incorporant les éléments essentiels du Centre américain des ouragans établi en Floride, le CMM communiquera des renseignements de grande importance sur les tempêtes tropicales à d'autres régions de l'Est du Canada.

Aussi, les Centres des Maritimes et de Terre-Neuve vont tenter d'établir, au cours de l'hiver, des postes spécialisés en météorologie maritime pendant les heures de jour. Pour le moment, le prévisionniste général alterne avec le prévisionniste au public pour assumer ces fonctions en établissant quatre fois par jour des prévisions maritimes pour une zone énorme, de l'est de la mer du Labrador, près du Groenland, à George's Bank, à une centaine de kilomètres à l'ouest du cap Cod. D'ajouter



Photo: Gordon Black

Si des scènes paisibles comme celle-ci, prise à Port Dufferin (N.-É.), constituaient la norme, il n'y aurait pas besoin de services météorologiques maritimes dans la Région de l'Atlantique.

Abraham, "Nous sommes prêts à entreprendre ce projet dès que possible, car nous en connaissons l'importance. Nous étendrons les heures de couverture au fur et à mesure de l'affectation de ressources à cette tâche."

Enfin, deux événements viennent rehausser la réputation de la Région de l'Atlantique comme bastion de la météorologie maritime. Plusieurs des séances de l'atelier de météorologie d'exploitation tenu du 14 au 16 octobre, à Halifax (N.-É.), ont mis en relief le temps maritime. Par exemple, T. Sutherland, du Centre météorologique de l'Ontario, a parlé des marées de tempêtes du lac Erié et de l'utilisation du modèle de marées de tempête du Centre météorologique. F. Saunders, professeur honoraire renommé à l'Institut de technologie du Massachussetts (MIT), a présenté la prévision de la cyclogenèse explosive et J. Pearce, du Centre météorologique des Maritimes, a traité ce sujet en le rattachant à la côte est. E. J. Oja, du Centre météorologique du Pacifique du SEA, a décrit le programme de contact des usagers de la radio maritime de la côte ouest.

Dans l'ensemble, l'atelier constitue une première initiative de ce genre pour la Région de l'Atlantique et, selon Abraham, un début tout indiqué à une ère nouvelle de la météorologie maritime pour la région.

La dernière grande réalisation, en matière de météorologie maritime de la Région de l'Atlantique, réside dans la conception, par le prévisionniste, Al MacAfee, de COMAR, d'un programme informatique capable de convertir en langage de tous les jours des symboles alphanumériques dactylographiés par l'opérateur. Le prévisionniste dispose ainsi de plus de temps pour évaluer la situation météorologique maritime, temps qu'il devrait autrement passer à rédiger la prévision en clair.

Abraham déclare que le CMM est, au Canada, le premier centre de ce genre à posséder un système de transfert codé. On notera avec intérêt que cette découverte est survenue dans le domaine de la météorologie maritime.

Au sujet de la météorologie maritime de la Région de l'Atlantique, Paul Galbraith, responsable du CMM, a insisté sur l'importance du projet d'étude des tempêtes atlantiques du Canada (PETAC) exécuté l'an dernier au sud de la Nouvelle-Écosse. "Nous avons tiré parti des prévisions expérimentales établies par les scientifiques du SEA. Nous avons aussi pu fournir aux scientifiques du PETAC les prévisions de tempêtes qu'il leur fallait pour entreprendre leurs expériences." Paul a ajouté que la zone située au sud de la Nouvelle-Écosse est idéale pour les projets d'étude de tempêtes à moyenne échelle et qu'il s'agit d'un bon endroit pour surveiller les "creusements explosifs". Pour cette raison, on a grosso modo choisi la même zone pour entreprendre un autre grand projet d'étude des tempêtes atlantiques : ERICA, dont la réalisation est prévue pour décembre 1988 et auquel les États-Unis joueront un rôle de premier plan. Le Canada et, en particulier, le SEA apporteraient un soutien sur le plan des prévisions météorologiques, des aéronefs et du matériel météorologique de haute technicité.

A propos de l'expansion des services météorologiques maritimes de la Région de l'Atlantique, le directeur régional du SEA, Des O'eill, a déclaré ceci : "Nous nous sommes engagés à fournir, en matière d'avertissements et de prévisions, les meilleurs services possibles aux pêcheurs et aux autres navigants qui oeuvrent au large de nos côtes. Les gestionnaires du SEA ont comme priorité numéro 1 l'obtention de ressources complémentaires qui permettront de terminer la réalisation des initiatives déjà entreprises."

Phil Merilees quitte le SEA pour un poste au NCAR

M. Philip Merilees, qui occupe depuis trois ans le poste de directeur général de la Recherche atmosphérique à l'Administration centrale du SEA - Downsview, vient de donner sa démission. Il va devenir directeur de la Division de météorologie à moyenne échelle et à micro-échelle au National Center for Atmospheric Research, à Boulder (Colorado).

M. Merilees est entré en 1977 au SEA en qualité de scientifique en chef pour le Centre climatologique canadien. Auparavant, il avait passé une dizaine d'années à la faculté de météorologie de l'Université McGill, où il était devenu président du département en 1976. Plus tôt dans sa carrière, il avait été pendant deux ans secrétaire de direction du Programme de recherches sur l'atmosphère globale (GARP). Il a aussi siégé à de nombreux comités nationaux et internationaux et fut président de la Société météorologique canadienne en 1974-1975.

M. Merilees a obtenu un B.Sc en physique de l'Université Sir George Williams, à Montréal, en 1960, un M.Sc. en physique de l'Université Carleton (Ottawa), et un Ph.D en météorologie de l'Université McGill en 1966.

Le 2 septembre au SEA-Downsview, on a tenu une réception d'adieu pour M. Merilees. Jim Young, directeur de la recherche sur la qualité de l'air, présidait la cérémonie. M. Young et l'ADMA Howard Ferguson ont prononcé des discours d'adieu, qui résumaient la carrière de M. Merilees.

Environ 80 personnes ont assisté à la réception. Certaines venaient de nombreuses divisions du SEA, d'autres étaient d'anciens employés. On nota particulièrement la présence de Barney Boville, ancien directeur du Centre climatologique canadien.



M. Phil Merilees vide les tiroirs de son bureau pendant sa dernière journée au SEA

Tornade — *suite*

En l'espace de quelques minutes, un citoyen habitant près de Leduc signala qu'il avait apparemment vu une tornade, en forme de corde, toucher le sol pendant 10 secondes avant de disparaître. Vu l'extrême instabilité prévue et la proximité d'une grande zone de population, on émit une alerte immédiate à Radiométéo pour l'avertissement de tornade, alerte prête à la transmission sur imprimante vers 15 h 07. Cela à peine fait, le technicien Pat Kyle, qui n'était pas de service, signala une tornade dans l'extrême sud-est de la ville. Ces données furent retransmises par Radiométéo, tandis qu'on émettait vers 15 h 30 la première mise à jour d'avertissement de tornade.

A ce moment-ci, Pat McCarthy, assistante affectée aux phénomènes violents, et d'autres personnes allaient et venaient à toute vitesse du bureau au toit de l'immeuble, en transmettant des bulletins visuels de l'ampleur et de la direction de la tornade. Comme la plupart des autres citoyens, nous étions fascinés par ce phénomène et c'est à contre-coeur que nous prîmes refuge dans le sous-sol, quand l'électricité fut coupée et que la tornade passa à 2 km environ à l'est de notre établissement. Auparavant, nous étions parvenus à joindre par téléphone le Centre météorologique des Prairies, à Winnipeg, pour lui passer la responsabilité des prévisions.

En moins d'une demi-heure, nous étions de retour. Grâce à l'alimentation de secours, nous reprîmes les responsabilités de prévision et émîmes d'autres mises à jour, en maintenant jusqu'à 19 heures l'avertissement de tornade, vu qu'un complexe nuageux tout aussi violent s'approchait, en passant au-dessus des parties du centre et du nord de la ville. Des rafales de vent dépassant 110 km/h, de la pluie et une autre chute de gros grêlons aggravèrent les dégâts causés dans la ville et à proximité.

Vers 20 heures, tout le danger était passé. Les avertissements et les veilles étaient terminés ou sur le point de l'être. Le front froid avait bel et bien balayé les lieux, rageusement! Vers le matin, une pluie froide et intermittente se mit à tomber sur les survivants et sur les équipes d'intervention qui se frayaient un chemin parmi les décombres.

Effets de la tempête:

Dans la bande étroite balayée par la tornade au-dessus du bord est d'Edmonton, il y eut une destruction incroyable pour une ville qui n'avait jamais subi de dégâts importants par tornade. Pendant son heure d'existence, elle traça, bonds par bonds, un chemin d'une longueur de 40 km et d'une largeur allant de 100 à 1 000 m. On signala que de gros camions et des wagons vides avaient été soulevés dans les air. Les maisons mobiles, les maisons, les bâtiments industriels et les usines furent tout à fait détruits. Des grêlons de la taille de balles molles déformées transpercèrent certains toits à la manière de boulets de canon.

Après étude, on attribua à cette tempête le niveau 4 de l'échelle Fujita à 5 points, valeur rarement dépassée dans le COULOIR AUX TORNADES du centre-ouet des États-Unis. Au cours des 97 dernières années, il n'y a eu que sept autres cas établis de tornades à Edmonton. Ces tornades y avaient causé des dégâts négligeables.

On a enregistré 27 morts et un survivant a subi des blessures permanentes. On a estimé les dégâts à 250 M $, y compris les coûts de la destruction complète et des dégâts immobiliers, les frais de personnel et de matériel pour le sauvetage et les réparations, ainsi que les frais d'assistance sociale pour les individus et les commerçants. Les autres orages violents de cette journée alourdirent la note, en entraînant encore des pertes par grêle, vent et pluie.

Pour l'essentiel, les prévisions ordinaires et le programme de veilles et d'avertissements ont bien rempli leur but. Les quelques stations de radio équipée de Radiométéo ont réagi le plus vite, mais le milieu de l'après-midi d'un vendredi qui précède une longue fin de semaine n'est pas le moment idéal pour atteindre les auditeurs.

La plus grosse charge de travail s'est présentée après l'événement. Les superviseurs, jusqu'au directeur régional, passèrent la fin de semaine et la majeure partie des dix journées suivantes à répondre aux multiples demandes de renseignements des médias. Certains commentateurs locaux, qui n'avaient pas d'expérience en la matière, ne comprenait pas la quasi-impossibilité de prévoir le début d'une tornade particulière. Nous fûmes toutefois agréablement surpris par la publication de nombreux commentaires positifs émanant d'autres météorologistes du Canada et des États-Unis. Cette attention fournit aussi la meilleure démonstration que Radiométéo est de loin le meilleur moyen de diffuser les avertissements de tornades et les mise à jour pour les grands centres urbains qu'elle dessert. Les stations commerciales de radio à l'écoute de Radiométéo étaient clairement au premier rang pour leurs avertissements et leurs mises à jour. On devrait de ce fait réaliser d'importantes ventes aux autres médias de diffusion et aux centres locaux d'intervention d'urgence.

G. R. Atchison

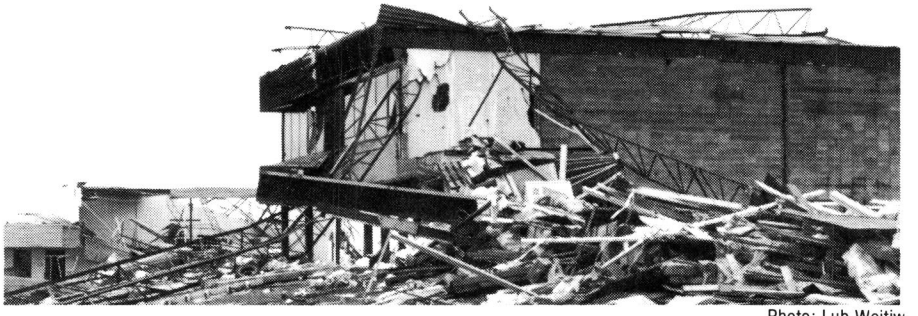


Photo: Lub Wojtiw

La photo montre des dégâts importants dans la région industrielle d'Edmonton, juste après que la tornade a sévi.

Tom Taylor, héros de la tornade

Un des héros qui se sont signalés lors de la tornade d'Edmonton est Tom Taylor, pharmacien de Leduc (Alberta), à quelque 24 km au sud-est de la ville touchée. M. Taylor venait juste d'apporter de la nourriture à ses chiens d'arrêt noirs au chenil, quand il vit d'épais nuages noirs de pluie au-dessus de sa maison. Pendant 15 secondes, du grenier de sa maison qui se dresse sur un site archéologique près du sommet d'une colline, il vit vers le sud-ouest un nuage bas avec un entonnoir "en serpent" pointé vers le sol. Au même moment, de grands vents faisaient virevolter des débris. Taylor, qui a acquis des dons d'observation dans son travail (il établit parfois pour la police des rapports sur des narcotiques), appela au téléphone le Centre météorologique de l'Alberta pour l'informer que "ça s'agitait pas mal dans le coin". Il lui signala que l'entonnoir venait de toucher le sol. C'était vers 14 h 55. Le centre météorologique, qui s'attendait à des phénomènes météorologiques violents, émit immédiatement un avertissement de tornade. Une demi-heure plus tard, la tornade, dans toute sa fureur, s'abattit sur une des principales zones industrielles d'Edmonton.

M. Taylor a passé la plupart de son temps dans le grenier. Il n'eut pas le temps de se diriger vers le sous-sol. Mais s'il devait recommencer, il se servirait du téléphone situé au-dessous du sol. Sa femme et ses enfants se trouvaient à Edmonton. Ils subirent les effets de la tornade parvenue au paroxysme. Ils étaient loin de se douter que M. Taylor avait été la toute première personne à détecter cette tornade et à la signaler promptement au centre météorologique.

Naturellement, le personnel du SEA fut enchanté de la prompte réaction de M. Taylor. Écoutons à ce propos M. Brian O'Donnell, directeur du SEA pour la Région de l'Ouest : "C'est en se fondant sur le rapport de M. Taylor qu'on a émis un avertissement de tornade pour Edmonton. La rapidité de sa réaction a permis de prévenir plus longtemps à l'avance les citoyens de la ville." M. Taylor a maintenant consenti à devenir un bénévole en vertu du programme de veille météorologique des phénomènes violents du SEA.

Taylor déclare qu'il s'intéresse au temps depuis son enfance. Un de ses amis intimes travaille dans le cadre du programme d'étude de la grêle de l'Alberta. Il écoute les prévisions météorologiques au moins trois fois par jour et possède un récepteur de Radiométéo Canada. Et Taylor de poursuivre : "Je suis de la campagne. Un fermier qui sait observer le temps, si vous voulez."

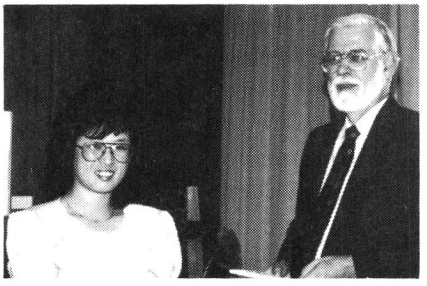
Deux représentants coréens visitent le SEA

Cet été, deux représentants du Service météorologique coréen ont visité séparément le SEA, tant l'Administration centrale, à Downsview, que des installations régionales.

Le premier visiteur fut M. Jong-hon Bong, directeur général de l'Institut de recherche météorologique du Service météorologique coréen (SMC). Entre le 25 et le 29 juin, il a visité plusieurs directions générales au SEA (Downsview, le radar météorologique de King City et certaines installations clés de la Région du Pacifique du SEA).

Lors de sa visite, M. Bong a manifesté un vif intérêt pour les innovations apportées aux systèmes du SEA en matière de réception satellitaire, de radars météorologiques et de radiométrie. Il en a profité pour examiner la possibilité d'acheter des systèmes d'observation satellitaire conçus au Canada. Il a aussi proposé la signature d'un protocole d'entente coréen-canadien qui comprendrait l'échange de visite, des consultations sur les systèmes satellitaires, la formation de météorologistes coréens et une recherche commune en sciences atmosphériques. Enfin, M. Bong a invité M. Ferguson et un météorologiste de service du SEA à visiteur les Jeux olympiques de Séoul, qui se tiendront en 1988.





Pendant leur visite de l'Administration centrale au SEA-Downsview, l'ADMA Howard Ferguson accueille les visiteurs coréens M. Jong-hon Bong et Mme Aesook Suh.

Puis, ce fut le tour d'accueillir Mme Aesook Suh, chercheur en météorologie satellitaire au SMC, venue au Canada pour se familiariser avec la réception satellitaire et les systèmes d'analyse.

Elle a notamment visité le Centre météorologique du Pacifique, l'immeuble du siège social de Downsview, en particulier des installations de réception satellitaire et la Division de l'hydrométéorologie, le Centre des glaces à Ottawa et le Centre météorologique canadien. Mme Suh a signalé au SEA que le SMC entreprenait de grands travaux de conception de systèmes de réception satellitaire. Elle ajouté que le SMC achèterait bientôt un super-ordinateur CRAY.

Le SEA va installer des tours qui offrent plus de sécurité

Les tours de mesure du vent sont une partie essentielle d'un réseau météorologique d'observation. A cet égard, le SEA possède près de 600 de ces tours. Plus de 300 de celles-ci mesurent 10 m de haut, les autres atteignent jusqu'à 16 m ou, montées sur des phares, sont plus courtes. Tout semblait très bien aller jusqu'à ce que, voilà trois ans environ, Travail Canada effectua des inspections et signala que ces tours n'étaient pas conformes aux codes de sécurité pertinents.

Après étude, la gestion du SEA a trouvé quelques solutions. D'abord, elle montrerait au personnel comment utiliser le matériel de sécurité quand il monte sur des tours. Puis, elle commanderait un nombre complémentaire de nouvelles tours dotées de dispositifs de sécurité et d'autres innovations qui rendraient le travail des observateurs, des techniciens et d'autres usagers plus facile et plus commode. Ces tours de remplacement observeraient le code de sécurité ou éliminerait la nécessité de grimper pour exécuter l'entretien du matériel de mesure du vent. On a montré à tous les inspecteurs comment utiliser le matériel de sécurité qui arrêtera la chute de quiconque tombe de la tour. Ils savent comment venir au secours des gens qui, une fois tombés, sont suspendus dans les airs sous l'action du système d'arrêt des chutes.

Bill Crowley, de la Division de la mise en oeuvre et membre du Comité de sécurité du SEA, déclare ceci: "En matière de sécurité, le SEA a obtenu d'excellents résultats dans l'ascension des tours. Mais s'il survenait un accident à une tour non conforme aux normes de sécurité, il pourrait s'agir d'un accident très grave."

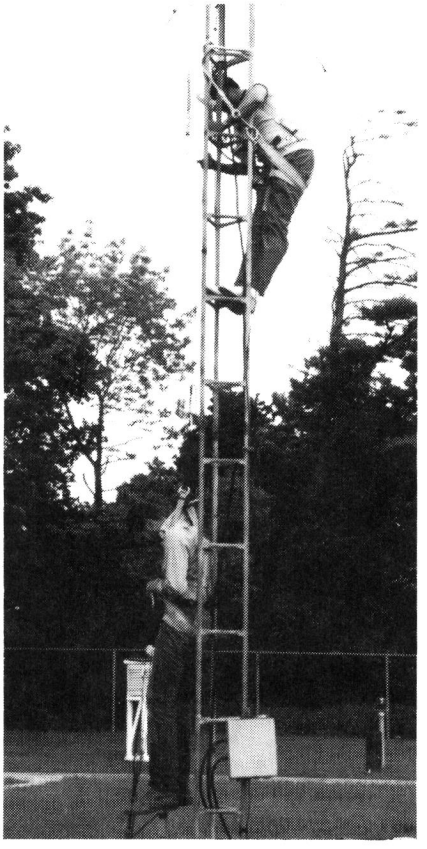
Une partie du programme d'amélioration du SEA donnera lieu au remplacement de toutes les tours par diverses autres. Les tours existantes seront remplacées par des tours qui permettent d'abaisser au sol le matériel de mesure du vent pour l'entretien, ce qui évite d'avoir à y monter.

Il faut deux personnes quand on grimpe à une tour. En effet, si celle qui monte tombe et qu'elle soit suspendue au système d'arrêt de la chute, il en faut une seconde pour la secourir. S'il n'y a plus besoin de grimper à la tour, une seule personne suffit.

On installera les nouvelles tours dans tout le SEA au cours des trois prochaines années. En attendant, on a donné à tous les usagers, dans toutes les régions du SEA, un cours de sécurité d'une journée relatif aux tours actuelles.



Une nouvelle tour pliable permet d'abaisser l'instrument au sol.



Le personnel du SEA éprouve un nouvel équipement de sécurité sur les tours normalisées d'instruments.

L'environnement, au coeur de la recherche énergétique

par Manon Cornellier

La recherche énergétique, une étude publiée récemment par le Centre de recherches pour le développement international (CRDI) et l'Université des Nations Unies, démontre l'importance pour les pays en développement de tenir compte de l'environnement dans leur planification énergétique.

Les auteurs, onze chercheurs membres du Groupe de recherche sur l'énergie formé par le CRDI et l'Université des Nations Unies en 1983, constatent qu'il est primordial pour les pays du tiers monde de tenir compte de l'environnement — autant que des facteurs socio-économiques et politiques — dans la planification de leurs besoins en énergie.

L'énergie, notent-ils, est essentielle au développement des pays du tiers monde. Ces pays affrontent des problèmes qui dépassent largement le seul contexte de la crise pétrolière et ils doivent adopter une approche intégrée dans le domaine de l'énergie.

L'étude, basée sur plus de 100 travaux de recherche, brosse un tableau des connaissances sur la recherche énergétique et ses applications, analyse les causes de succès et d'échec des stratégies de recherche et retient les meilleures d'entre elles.

Selon le groupe, trois prémisses doivent orienter la recherche énergétique:

- la recherche, dans le secteur de l'énergie, doit être confrontée à celle qui porte sur l'économie et la société dans son ensemble;
- l'étude des sources d'énergie doit se faire en considérant les besoins des utillisateurs;
- et l'économie d'énergie est aussi importante que la production d'énergie.

Trois grands problèmes reliés à l'environnement ont aussi retenu l'attention des chercheurs: le déboisement et la désertification, les pluies acides et l'effet de serre. A ce chapitre, le groupe suggère des études plus approfondies afin d'être sûr du lien qui existe entre les problèmes environnementaux et les sources d'énergie.

Même s'ils reconnaissent l'intérêt des nouvelles sources d'énergie, les chercheurs ont cependant mis l'accent sur les utilisations des ressources existantes et les façons de les améliorer ou de les remplacer.

Une avenue prometteuse pour le pays en développement est sans doute la recherche dans le domaine des économies d'énergie grâce à l'amélioration des équipement existants.

Un léger accroissement de l'efficacité des appareils, qu'il s'agisse de chaudières ou de moteurs, peut faire une grande différence sur leur consommation d'énergie. Il est souvent moins dispendieux de mieux utiliser les formes actuelles d'énergie que de développer de nouvelles sources d'approvisionnement.

Mais il faut un milieu propice à la recherche qui facilite la formation de chercheurs, la circulation des connaissances et l'autonomie grâce à des infrastructures adéquates, des plans directeur pertinents et un financement approprié.

Les pays en développement devraient, selon le rapport, concentrer leurs efforts dans les deux secteurs suivants: les ressources sensibles aux forces du marché et les ressources d'exploitation coûteuse. Du gaz naturel à la biomasse en passant par le pétrole. l'énergie solaire et bien d'autres, les piste sont nombreuses.

Article tiré de la revue Développement

Que savez-vous du MDE?

La plupart des lecteurs de Zéphyr font partie non seulement du SEA, mais aussi d'Environnement Canada. Toutefois, tous ne sont pas également informés des activités de leur ministère, ni des grands rapports environnementaux qui résultent de ce lien. Comme Environnement Canada précise actuellement son identité institutionnelle, le moment semble venu d'éprouver vos connaissances, à l'aide d'une série de questions. Quand vous aurez terminé, veuillez vous reporter aux réponses, à la page 8 et établir comment vous vous en tirez à titre de membre de l'équipe du MDE.

Éprouvez vos connaissances, grâce à ce petit exercice. Réponses et notes à la page 8.

1) Quand créa-t-on Environnement Canada?
   a) 1914 b) 1971 c) 1981

2) Combien d'employés Environnement Canada compte-t-il (chiffre approximatif)?
   a) 4 000 b) 10 000 c) 92 000

3) Combien de parcs nationaux (de conservation) y a-t-il dans le réseau d'Environnement Canada?
   a) 14 b) 26 c) 34

4) Combien de pays ont signé une entente mondiale visant à réduire les produits chimiques industriels qui menacent la couche d'ozone?
   a) 15 b) 24 c) 40

5) Quel fut le premier pays à ratifier la Convention de Vienne pour la protection de la couche d'ozone en juin 1986?
   a) Suède b) États-Unis c) Canada

6) Quelle est la valeur du timbre de 1987 sur la conservation de l'habitat de la faune?
   a) 0,36 $ b) 2 $ c) 6,50 $

7) Combien de personnes ont travaillé à divers endroits en 1985-1986 dans le cadre du programme des bénévoles pour les parcs du centenaire?
   a) 5 000 b) 10 000 c) 25 000

8) A la suite d'une réorganisation ministérielle de l'an dernier, un nouveau Service a vu le jour:
   a) Conservation et protection b) Terres et eaux intérieures c) Qualité de l'environnement

9) Le gouvernement fédéral a entrepris de verser au gouvernement de Colombie-Britannique la somme suivante pour sauver le parc national de Moresby-Sud:
   a) 35 000 000 $ b) 106 000 000 $ c) 620 000 000 $

10) En mars 1986, le ministre de l'Environnement a annoncé que le plomb serait éliminé de l'essence d'ici à:
   a) 1988 b) 1992 c) 2000

11) Outre la Loi sur le ministère de l'Environnement, combien de lois sont régies par Environnement Canada?
   a) 6 b) 11 c) 15

12) Dans quel mois de l'année la semaine de l'Environnement du MDE tombe-t-elle d'ordinaire?
   a) mars b) juin c) octobre

13) La nouvelle Loi sur la protection de l'environnement énumère tous les produits chimiques en usage au Canada jusqu'en décembre 1986. On en dénombrait:
   a) 9 500 b) 30 000 c) 124 000

14) Que signifie BPC?
   a) Bicarbonates précalcinés b) Base phosphorescente chimique c) Biphényles polychlorés

15) Quel est le plus grand parc du Canada?
   a) Banff b) Nord de l'Île Ellesmere c) Wood Buffalo

Le 3 novembre, 1985: L'ouragan Juan, qui tire à sa fin, se déplace lentement au-dessus de la vallée du Mississippi et atteint l'Ontario : nombreux records de précipitations en 24 h. Trenton signale 60 mm de pluie.

Des scientifiques du SEA remportent de grands prix de rendement

Cette année-ci, c'est Robert Vet, scientifique de l'assurance-qualité au Réseau canadien d'échantillonnage des précipitations et de l'air du SEA (RCEPA), qui a remporté le prix de rendement Jim Bruce.

À une cérémonie spéciale tenue le 14 juillet dans la salle de conférences du SEA-Downsview, M. Jim Bruce, qui est maintenant directeur de la Coopération technique de l'Organisation météorologique mondiale à Genève, a remis ce prix à M. Vet.

M. Bruce a fait l'éloge de Bob Vet pour sa remarquable contribution au domaine de la météorologie de la pollution atmosphérique, travail qui a contribué à combler la lacune qui existe entre la physique et la chimie de l'atmosphère et qui a abouti à la création d'un modèle de dispersion du panache des émanations des hautes cheminées.

M. Bruce a aussi fait l'éloge de Bob Vet pour son travail de scientifique-conseil au ministère de l'Environnement de l'Ontario et pour ses activités à la Concorde Scientific Corporation, où il réalisa des études de dépôt humide et sec dans la région de Sudbury.

On a enfin félicité M. Vet pour avoir représenté le SEA, au niveau tant national qu'international, pour avoir aidé à renforcer les programmes mondiaux et avoir contribué à l'initiative canadienne lors de la négociation des entente sur la pollution atmosphérique transfrontalière.

Le prix de rendement Jim Bruce est donné en reconnaissance d'une contribution exceptionnelle au fonctionnement et aux objectifs du SEA. Bob Vet n'est que la seconde personne qui ait reçu ce prix. Jim Bruce en était le premier récipiendaire (en 1986).

En cette même occasion, Bob Vet a aussi reçu un prix de mérite du SEA, remis cette fois-ci par l'ADMA Howard Ferguson.

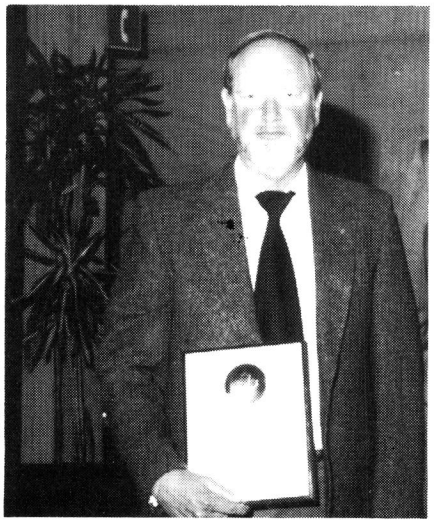
A propos du travail de M. Vet au RCEPA, M. Ferguson a dit ceci: "Son travail a permis d'établir un réseau d'échantillonnage perfectionné, d'une qualité égale ou supérieure à tout autre réseau du monde . . . M. Vet est conseiller-expert canadien auprès de plusieurs autres réseaux internationaux".

L'autre récipiendaire du prix de mérite fut M. John O'Reilly, qui a reçu ce prix en reconnaissance de sa création réussie du Centre de prévision du niveau des eaux des Grands Lacs d'Environnement Canada et de l'établissement et de l'application du programme de prévision du niveau élevé des eaux.

M. Ferguson a ajouté que les travaux de John n'ont pas seulement conduit à un succès technique, mais ont aussi créé des services qui contribuent régulièrement à la sécurité et au bien-être d'un nombre important d'habitants de l'Ontario. A l'ADMA de conclure: "Au début, John était le prévisionniste, le concepteur de programme, le chercheur et le formateur. C'était un homme à tout faire, mais quel homme à tout faire!".



Jim Bruce, à gauche, pose en compagnie de Robert Vet peu de temps après que ce dernier ait reçu son prix J.P. Bruce pour des services éminents rendus au SEA.



John O'Reilly reçoit un prix de mérite du SEA à la même cérémonie.

Le laboratoire de données satellitaires va rejoindre l'ordinateur



Alex Aldunate, à gauche, Lynda Stirling et Don McKay assistent à la cérémonie du transfert de l'équipement des données satellitaires à la section informatique du SEA.

Tout le matériel de réception des satellites météorologiques de l'immeuble du SEA (Downsview) a été transféré de la station de dépistage du troisième étage à l'ordinateur interne AS-9 de l'étage du dessus.

Selon Lynda Stirling, chef de l'exploitation informatique au SEA (Downsview), il s'agit de rassembler en un même lieu tout le matériel d'informatique et de télécommunication.

Par le passé, la Division de la météorologie aérospatiale (ARMA) à Downsview possédait une aile d'exploitation et une autre de recherche. Il s'agit maintenant d'une simple section de recherche.

Md. Stirling explique que ce déménagement présentera des avantages certains pour les télécommunications des satellites météorologiques de l'ensemble du pays. Par exemple, on renforcera les liaisons de données pour la modélisation météorologique liée à l'ordinateur CRAY du Centre météorologique canadien (CMC), situé à Dorval (Québec). On améliorera aussi, de ce fait, les liens de communication entre Downsview et les stations de dépistage satellitaire situées à Edmonton et à Vancouver, ainsi qu'avec la nouvelle station de dépistage du CMC.

De nombreux employés du SEA travaillant dans l'immeuble déclarent qu'ils sont tristes de voir disparaître les opérations satellitaires, mais d'autres employés voient dans ce déménagement un signe de progrès technique.

Corrections

L'avis de nomination de deux directeurs régionaux du SEA, figurant dans le Zéphyr de juillet-août, aurait dû se présenter ainsi: "Brian O'Donnell et Patrick Pender sont respectivement nommés directeurs de la Région de l'Ouest et de la Région du Pacifique du SEA." Zéphyr regrette toute confusion que l'avis initial peut avoir causée.

Dans l'article relatif à la semaine Canada en forme publié dans le Zéphyr de juillet-août, le nom de Terry O'Connor aurait dû figurer dans la liste des membres du comité.

Le 15 novembre, 1983: Une semaine de fortes pluies sur la côte sud-ouest de la C.-B. rendent troubles les réserves d'eau de Vancouver; les glissements de boue et les ponts emportés entraînent la fermeture de la route panoramique jusqu'à Squamish.

Le 4 novembre 1987: L'aéroport de Vancouver établit un record de chaleur pour novembre : 8,4° (48 ans).

L'histoire d'une heureuse retraite par Syd Buckler

Je pris ma retraite tôt, à l'âge de 59 ans. Vu que j'avais travaillé pendant des périodes de six à huit ans chacune à Winnipeg, à Edmonton, à Whitehorse, à Toronto et à Regina, ma femme et moi, nous n'avions pas d'opinion ferme sur nos "racines". Nous songeâmes à l'Île, maudimes le service des bacs et nous installâmes dans la vallée de l'Okanagan. On y trouve le meilleur climat du Canada, entre Penticton et Kelowna. Je puis attester cette opinion très répandue.

Nous achetâmes une maison à Peachland, au bord de la plage, à mi-chemin environ de Kelowna et de Penticton. Elle comprenait quatre chambres à coucher, car nous nous attendions, à juste titre, à beaucoup de compagnie. Le terrain comptait 13 arbres fruitiers qui, pour un gars des Prairies, représentaient le Paradis. Je ne tardai pas à être très occupé. J'appris que les pêches qu'on laissait mûrir à l'arbre prenaient le goût exquis du nectar et de l'ambroisie, mais qu'il fallait cueillir les poires quand elles étaient aussi dures qu'un caillou. Je l'appris à mes dépens, en perdant ma première récolte. Il me fallut aussi deux années pour apprendre comment réprimer les carpocapses et la cloque du pêcher. Pendant les huit années de notre séjour, nous récoltâmes en moyenne 350 lb de poires et 220 lb de pêches. Nous avions aussi des cerisiers, des pommiers et des abricotiers. Cela explique peut-être pourquoi la plupart de nos visiteurs venaient en août et au début de septembre.

Mon épouse aimait beaucoup pêcher, comme maintenant d'ailleurs. J'étais moins emballé. Au départ à la retraite, nous réservâmes 4 000 $ pour l'achat de matériel de pêche. Nous acquîmes un Trihull de 16 pieds. L'été dernier, par simple curiosité, j'ai évalué le prix d'un nouvel équipement à plus de 11 000 $ de 1986. L'exploitant du port de plaisance de Peachland nous a dit que nous utilisions notre bateau plus que tout autre propriétaire d'embarcation de l'endroit. J'avais noté nos réussites dans un registre, en 13 ans, nous prîmes 2 497 kokanis, saumons n'ayant pas accès à la mer et qui atteignent jusqu'à 13 pouces. Nous prîmes aussi des truites arc-en-ciel et des lottes, mais les kokanis frits à la poêle sont de loin préférables à la truite. Un certain été, je pris bel et bien un kokani de 24 pouces. On n'en avait pas signalé de plus gros cette année-là. Cet exploit me valut de gagner une canne à pêche et un moulinet, d'une valeur de 80 $.

Je me mis à "faire du vin", à base de pêches, de cerises et de raisins. J'en fabriquais une vingtaine de gallons par an. Une fois que Rudy et Trudy Triedl me rendaient visite, ils me félicitèrent avec tant d'effusion pour mon vin rouge sec que j'envoyai des échantillons à la Foire d'automne de Pearchland. Je gagnai deux rubans: un second prix pour le vin blanc et un troisième prix pour le rouge sec. Je m'aventurai alors à la Foire de Summerland. Mon vin rouge s'y classa une fois encore troisième et mon Riesling 1980 reçut le prix du "Meilleur vin de l'exposition".

Déménageant d'une ville à l'autre, je ne m'étais jamais assez enraciné pour accepter de responsabilité civique (sauf au sein du conseil du club de curling, bien entendu). Mais, à Peachland, je me rendis au conseil municipal pour lui offrir mes services. Je me retrouvai observateur de Peachland à la Commission des eaux du bassin de l'Okanagan, au sein du Comité consultatif de planification régionale et au Comité consultatif de l'aéroport. Dernièrement, j'ai présidé un comité voué à la reconstruction de notre patinoire de curling, mais, en 1979, le conseil municipal me convoqua à une assemblée ordinaire. Il avait décidé de rétablir une coutume consistant à désigner un Citoyen de l'Année. On me remit un plateau d'argent, car on m'avait nommé Citoyen de 1978.

En 1974, pour réunir tous les membres de la famille Buckler, nous utilisâmes notre maison, les motels avoisinants et les terrains de camping. L'opération fut si réussie que nous la répétâmes quelques années plus tard. Puis nous passâmes deux ans à organiser le rassemblement des Archibald pour la parenté de Phyllis. Il y avait plus de 60 membres de la famille. Il nous fallut louer l'hôtel de ville pour le banquet.

Nous sommes tous les deux amateurs du jeu de quilles; Phyllis joue deux fois par semaine et moi une fois. Je jouais régulièrement au curling, jusqu'à 80 parties par hiver, avant d'arrêter il y a deux ans. J'étais encore au meilleur de ma forme. Je me mis à la natation. Je nage maintenant un mille, deux fois par semaine, parfois trois.

En 1981, nous vendîmes notre maison de Peachland et déménageâmes à Kelowna. J'étais fatigué de m'occuper de l'habitation et nous étions las de conduire jusqu'à Kelowna pour jouer aux quilles et au curling, pour aller à la messe, à l'hôpital, etc. Nous achetâmes un appartement en copropriété, appartement de terrasse à 3 chambres offrant une vue magnifique. Ce fut pour mois une expérience édifiante. Par la suite, je donnai, à la chaîne locale de télédistribution, six émissions sur la vie dans une copropriété.

Comme vous le voyez, la retraite est pour moi une période active et enrichissante de ma vie. Permettez-moi de préciser que la retraite se fait à deux. L'épouse d'un retraité, dit-on, voit son mari deux fois plus qu'avant, mais le revenu est diminué de moitié. Ce dicton est en partie vrai. Nous n'avons pas eu de problèmes d'argent. Nous avons eu beaucoup plus de revenus disponibles qu'à tout autre moment antérieur à la retraite.

Syd Buckler est un météorologiste retraité



La sous-ministre G. A. Sainte-Marie, au centre dans la rangée du milieu, a assisté à une réunion du comité de gestion atmosphérique tenue au SEA-Downsview lors de sa visite en juin. On y étudia plusieurs questions importantes touchant l'environnement atmosphérique. De gauche à droite, dans la rangée avant: Brenda O'Connor, directrice de la direction générale des communications, Gordon Shimizu, DG de la Direction générale des services centraux, J.G. Côté, des Affaires intergouvernementales, à la deuxième rangée; Phil Aber directeur régional de l'Ontario pour le SEA, Howard Ferguson, ADMA, Md. Sainte-Marie, Pierre Martel, DG de la Planification et de l'évaluation des politiques, Avo Lepp, directeur de la Direction des resources humaines, dans la rangée arrière; Jim McCulloch, DG du Centre climatologique canadien, Lloyd Bernsten, directeur de la Direction de la formation, Joe Boll, directeur de la Direction des finances et de l'administration, Brian O'Donnell, directeur régional de l'Ouest pour le SEA, Phil Merilees, DG de la Direction générale de la recherche atmosphérique.

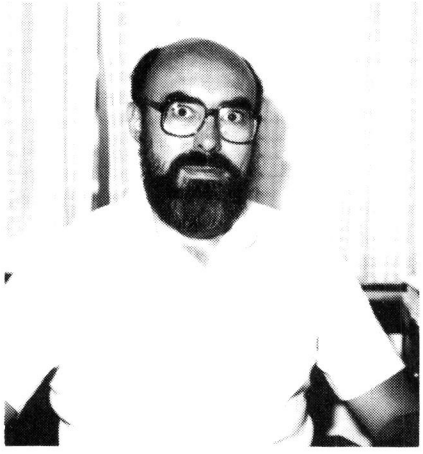
Réponses au questionnaire

1 b, 2 b, 3 c, 4 b, 5 c, 6 c, 7 a, 8 a, 9 b, 10 b, 11 c, 12 b, 13 b, 14 c, 15 c

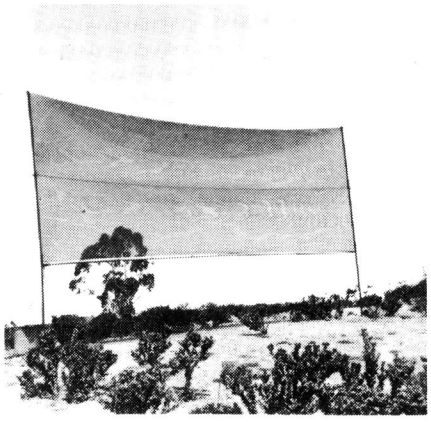
Note:	
14 - 15 réponses correctes	Vous pourriez représenter le Ministère partout
11 - 13 réponses correctes	Vous connaissez bien le MDE
8 - 10 réponses correctes	Vous connaissez la plupart des données de base
5 - 7 réponses correctes	Vous pourriez renforcer un peu votre connaissance
2 - 4 réponses correctes	Vous pensez peut-être trop en termes de SEA
0 - 1 réponses correctes	Vous avez perdu le contact avec le MDE

Un scientifique du SEA obtient de l'eau potable à partir du brouillard des Andes

Nous estimons que l'expédition de Bob Schemenauer, chercheur du SEA, au nord du Chili, pour mener des expériences d'extraction d'eau potable dans le brouillard de haute altitude, constitue un projet unique en son genre dans un monde en proie à des pénuries d'eau. Jusqu'à présent, le travail de M. Schemenauer n'a guère reçu de publicité. Les lecteurs apprendront peut-être avec intérêt que son lieu de travail ne se situe qu'à une centaine de kilomètres du lieu de travail d'un autre scientifique canadien éminent, Ian Shelton, qui découvrit la première supernova en 383 années. Ayant réalisé cette découverte à partir d'un petit observatoire situé à Las Campanas, Shelton a profité de la même atmosphère limpide et sèche que Schemenauer utilisa pour ses expériences sur l'eau potable.



Bob Schemenauer



Ce collecteur d'eau de brouillard, en mailles de nylon de 40 m², est installé sur une crête au nord du Chili.

Le 25 octobre, M. Robert S. Schemenauer, physicien de la Division de la recherche sur la physique des nuages (ARPP) a pris l'avion jusqu'au Chili pour exécuter un projet qui permet d'extraire de l'eau potable du brouillard.

Dans un monde plus en plus en proie aux pénuries d'eau, le projet de Bob vise directement un objectif économique: produire, à partir du brouillard, de l'eau en quantité suffisante pour encourager l'habitation et la culture dans les zones arides. Le nord du Chili est très aride — à Arica, dans l'extrême nord du Chili, la hauteur annuelle de pluie est de 0,7 mm, ce qui en fait un des endroits les plus arides du globe. Mais le nord du Chili a beaucoup de brouillard et l'on songe depuis de nombreuses années à en extraire l'eau.

Les brouillards en haute altitude du nord du Chili s'appellent camanchacas; ils résultent du temps dominant qu'il y fait. Et Bob d'expliquer: "Dans le tiers nord du Chili et du Pérou, le temps est dominé par l'anticyclone du Pacifique pendant toute l'année. Il en résulte un courant du sud ou du sud-ouest dans le premier kilomètre de l'atmosphère et il se forme de ce fait un stratus ou un stratocumulus qui s'étend de quelques certaines de kilomètres dans l'océan." Les nuages s'amènent sur la terre en provenance de l'océan et enveloppent les montagnes côtières. Ces camanchacas offrent une source éventuellement riche en eau.

L'emplacement sélectionné pour le projet des camanchacas est une vieille mine de fer abandonnée appelée El Tofo, située près d'un petit village à 60 km au nord de la ville de La Serena (population de 90 000 habitants). La zone El Tofo est "aride et rocailleuse, parsemée de cactus et de broussailles". Il y tombe moins de 100 mm d'eau par an et, de ce fait, le village doit faire venir son eau par camion. El Tofo se trouve à 5 km de la côte et à 780 m d'altitude. D'après des expériences. une altitude de 600 à 800 m est la meilleure qui soit pour intercepter les camanchacas.

El Tofo est donc un endroit idéal pour éprouver le objectifs économiques du projet des camanchacas. Il y a beaucoup de nuages pratiquement à longueur d'année, et ils possèdent cette qualité essentielle: ils sont exempts de pollution. La formation de Bob en physique et chimie des nuages, et dans l'exécution du projet de la chimie du brouillard à haute altitude (CBHE) au Québec le rendent particulièrement apte à jouer un rôle essentiel dans ce projet.

Ce projet peut-il fournir au village voisin El Tofo de l'eau extraite du brouillard à un prix moins élevé que l'eau acheminée par camion? Peut-il fournir de l'eau en quantité suffisante pour irriguer le terrain avoisinant et stimuler la croissance de la végétation et de certaines cultures agricoles, ce qui permettrait de renverser le courant de dépopulation des zones rurales du Chili? Pour des raisons d'économie, des villageois ne font amener l'eau qu'à une quantité à peine suffisante pour répondre au minimum de leurs besoins quotidiens.

Bob mentionne qu'il se trouve, sur le petit sommet qui surmonte El Tofo, "un groupe anormal d'eucalyptus" plantés, voici de nombreuses années, par les ouvriers de la mine de fer pour faire de l'ombre. Ces mineurs arrosèrent ces arbres jusqu'à ce qu'ils aient atteint 2 m de haut, hauteur à laquelle ces arbres étaient à même d'extraire leur propre eau à partir du brouillard ambiant. Ces arbres ont maintenant 10 m de haut. On voit donc ce qu'on pourrait réaliser pour l'ensemble du terrain si on pouvait lui fournir assez d'eau.

La technique de collecte d'eau à partir du brouillard est simple et efficace. Il ne faut rien de plus qu'un large rectangle de mailles de nylon, peu coûteuses et vendues localement, qu'on étend entre deux poteaux de bois plantés dans le sol. Un courant d'air a la tendance de contourner les objets solides. Voilà pourquoi on utilise une maille de nylon. Les interstices permettent à l'air de traverser la maille. Quand l'air chargé de brouillard traverse la maille, il laisse sur les brins de minuscules gouttelettes d'eau, qui se fusionnent pour former des gouttelettes assez lourdes pour dégouliner le long des brins de la maille et s'accumuler dans le creux qui forme la limite inférieure de la maille. S'il fait un brouillard très dense, cette maille va faire s'écouler de l'eau à raison de 10 L par mètre carré et par jour.

Pour le projet des camanchacas, on va installer une soixantaine de ces mailles de nylon, chacune d'elles mesurant 40 mètres carrés; la plupart seront placées sur un petit sommet, entre deux grands pics.

Le captage d'eau à partir du brouillard est, au Chili, une formule qu'on étudie depuis quelque temps. Les collègues de M. Schemenauer sont Humberto Fuenzalida, de l'Université du Chili et Pilar Cereceda, de la Pontificia Universidad Catolica de Chile. Dans leur communication commune "Ressource négligée en eau: les camanchacas de l'Amérique du Sud", ils citent des mentions remontant à 1966. Beaucoup de météorologie, de climatologie, de physique et d'autres sciences ont fourni les conditions préalables à la réalisation pratique du projet des camanchacas.

Il ne s'agit pas simplement d'aller à El Tofo et d'installer ces mailles. Il faut étudier, par la même occasion, la météorologie pertinente. Il faut calculer avec précision la collecte annuelle d'eau. Il faut réaliser la conception technique de tuyaux et des réservoirs d'eau. Le coût de toute cette installation doit être réparti article par article pour fournir une estimation importante de la viabilité du projet. Le document "Une ressource négligée en eau" traite en détail de tous les aspects du projet.

L'équipe qui travaillera à l'emplacement El Tofo comprendra une quinzaine de personnes, certaines d'entre elles étant des étudiants d'universités du Chili. Il y aura aussi deux techniciens du SEA, de l'ARPP — Mohammed Wasey et Richard Poersch. Ils ont emballé et expédié certains des instruments les plus perfectionnés du SEA pour la physique des nuages et le sondage atmosphérique. Ils seront responsables d'une grande partie de l'exploitation des instruments installés sur les lieux.

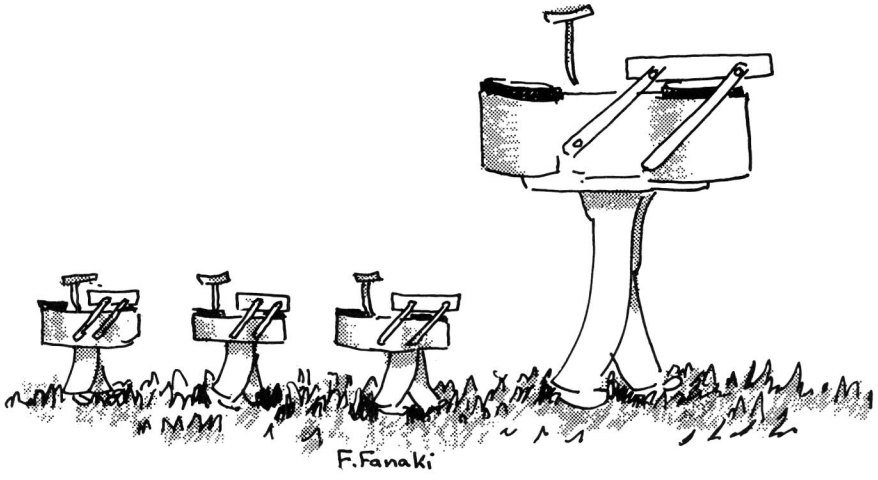
Bob a aussi joué un rôle prédominant pour le financement du projet des comanchacas dans ses rapports avec le Centre de recherche en développement international (CRDI). Il assure la liaison entre les groupes chiliens et le CRDI, à Ottawa.

Une fois qu'on se sera occupé des aspects techniques du projet des camanchacas, les villageois eux-mêmes pourront exploiter et entretenir le matériel.

Si le projet donne de bons résultats pratiques, on peut espérer qu'il servira de modèle à des projets analogue qu'on pourrait entreprendre dans le monde entier, dans tout endroit où il y a une combinaison d'aridité, de montagnes et de brouillard non souillé.

ZÉPHYR EN A EU VENT

Les projets vont bon train pour créer un bureau météorologique spécial à l'occasion des Jeux Olympiques d'hiver de 1988, qui se tiendront à Calgary. Situé dans une annexe spéciale de l'Aéroport international de Calgary, le bureau météorologique comptera 14 agents météorologistes du SEA. Après avoir suivi une formation sur les lieux pendant une semaine, les prévisionnistes des Olympiques pourront travailler en exploitation pour assurer un service de 24 heures par jour pendant la période des jeux, du 13 au 28 février. Outre les renseignement météorologiques normaux, ce bureau fournira des données spécialement adaptées sur la vitesse du vent, la température, les précipitations (la neige, espérons-nous) et, avant tout, sur les conditions de ski. Les prévisions porteront sur l'ensemble du corridor Olympique, à partir du Parc Olympique du Canada, près de Calgary, au centre nordique Canmore, près de Banff. On a confié la direction des services météorologiques du SEA pour les Olympiques à André Lachapelle, prévisionniste spécial aux Jeux Olympiques de Los Angeles en 1984. Bruce Thomson, d'Edmonton, est le coordonnateur du SEA pour les Olympiques.



***"Nouvelle génération d'échantillonneurs."* (Dessin humoristique extrait du rapport annuel de 1986-1987 sur la qualité de l'air)**



Sous le regard attentif de Raoul le hibou, Joyce Montagnese, coordonnatrice d'Expérience Travail pour le Conseil d'éducation de la région York, montre le certificat de reconnaissance qu'elle vient de remettre à Lloyd Berntsen, chef de la Direction de la formation du SEA, à Downsview.
Ce prix était une façon de remercier le SEA pour donner un emploi temporaire à deux retardés qu'on pouvait former. L'un deux a travaillé à l'administration de la Direction générale des services centraux, l'autre au Centre climatologique canadien.
Mlle Montagnese a signalé que, du fait de l'expérience qu'ils avaient acquise au SEA, les deux étudiants travaillent maintenant à temps plein dans un magasin. Tous deux avaient fréquenté des écoles intégrées dans la région de York, près du Grand Toronto.

Il y a eu auparavant des services ne faisant pas partie du SEA à l'Administration centrale de Downsview, mais ils étaient en grande partie étroitement rattachés à l'exploitation du SEA. Maintenant, pour une période limitée, on a accordé des locaux à un organisme environnemental situé si haut dans la hiérarchie qu'il n'entretient guère de contacts quotidiens avec le SEA. Le Conseil canadien des ministres des ressources (CCMRE) a déménagé de son Administration centrale située dans la partie médiane de Toronto. Suivant le directeur Richard Barrens, le CCMRE traite d'une grande diversité de question environnementales à l'échelon national et régional.

Plus récemment, le CCMRE a entretenu des contacts avec le groupe d'étude national de l'environnement et de l'économie, qui traite de la politique gouvernementale touchant des questions comme les pluies acides, les forêts et les pêches. Aussi, le CCMRE nous prévient que l'économie du Canada est compromise par de mauvaises décisions environnementales. Ce rapport fut diffusé à la réunion annuelle qu'a tenue le CCMRE dans la ville de Québec, du 21 au 24 septembre. Toutes les provinces sont représentées au sein du CCMRE.

Le 6 novembre, 1969: Une tempête de pluie verglaçante qui s'étend sur une semaine endommage sérieusement les lignes électriques reliant Québec aux nouvelles génératrices de la centrale de Manicouagan; 30 pylônes sont touchés.

Le 7 novembre, 1969: Du 7 au 12, la tempête au-dessus du Québec, le 6, fait rage dans les Maritimes. La pluie dure 144 h en N.-É. et à l'Î.-P.-É.; 364 mm de pluie inonde Ingonish Beach.

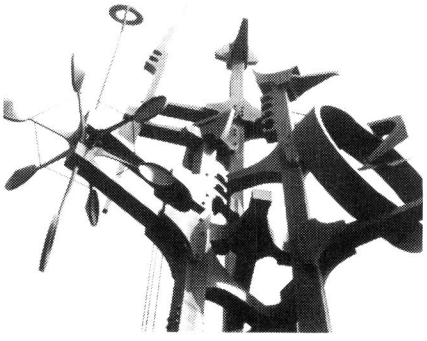


Voici des nouvelles tardives sur la Semaine de l'environnement: Entre le 1er et le 7 juin, la Division de la recherche en hydrométéorologie du Centre climatologique canadien, à Saskatoon, a tenu deux "après-midi en laboratoire". Les participants étaient des étudiants en technique des ressources en eau. En outre, le Centre national de la recherche en hydrologie a tenu une journée d'accueil, à laquelle le SEA a participé.
Quelque 500 personnes ont assisté à la journée. La jeune famille figurant sur la photo examine le radar météorologique. A ses côtés, donnant des explications, se trouvent des employés de la division: Kristen Darlington (centre) et Don Bauer (à droite). En outre, Rick Lawford a donné un diaporama sur le temps, le climat et les ressources en eau.

A la page 4, à propos de la tornade d'Edmonton, nous avons mentionné le grand esprit d'initiative de M. Tom Taylor qui fut le premier à signaler le nuage en entonnoir meurtrier et qui s'est inscrit par la suite à titre d'observateur bénévole des phénomènes météorologiques violents du SEA.

La Direction générale des communications a récemment demandé à d'autres régions du SEA qui, selon elles, étaient des bénévoles remarquables dans leur domaine. Deux noms viennent à l'esprit. La Région de l'Atlantique a mentionné Huntley Dingwell, qui est à la fois un observateur du climat et un observateur des phénomènes violents pour le SEA. L'an dernier, il a reçu un certificat de mérite pour 15 ans de service et on a noté qu'il est un des rares bénévoles à dactylographier ses rapports. En outre, en 1966, après 30 ans de participation bénévole à la caserne de pompiers de New Glasgow, M. Dingwell a reçu une médaille spéciale du gouverneur général. Outre les relevés de température et de précipitation qu'il effectue pour le SEA, il mesure le vent à l'aide de son propre anémomètre. Enfin, c'est un enthousiaste du service radio général et il s'intéresse à la menuiserie et à la collection des pièces de monnaie.

La Région du Pacifique mentionne le travail de bénévolat du frère Maurus de Klerk, membre du séminaire du Christ-Roi, situé à Westminster Abbey, à Mission. Le directeur régional du SEA, Pat Pender, signale que le frère Maurus est responsable de l'entretien du terrain et remplit régulièrement des fonctions quotidiennes d'observation depuis l'ouverture de la station climatique "Mission West Abbey", en octobre 1962.



Même sous cet angle inhabituel, la plupart des employés du SEA n'auront aucun mal à deviner qu'il s'agit d'une photo de la sculpture érigée en dehors de l'immeuble de l'Administration centrale du SEA-Downsview. Cette photo fut prise par Mike Duffy, à qui l'on doit aussi la photo du lancement du ballon de sondage de l'ozone, publiée sur la page de couverture du numéro de juillet/août.



Dans la photo ci-dessus: Hans Teunisen, à gauche, coordonnateur ministériel du MDE, du Grand Toronto, Deedee Davies, coordonnatrice de la publicité, Karl Vanek, coordonnateur des événements spéciaux, font partie des nombreux employés du SEA qui, le 25 septembre à Queen's Park, ont assisté au lancement de la campagne Centraide fédérale-provinciale de 1987.

Le mois dernier, un ingénieur en hydrologie de l'Équateur est arrivé au SEA-Downsview, sans papier, sans argent, sans connaître l'anglais et sans avoir annoncé sa visite. P.T. Louie, de la Section d'hydrométéorologie du Centre climatologique canadien, s'est occupé à la hâte de l'hébergement et des arrangements bancaires du visiteur, puis a organisé la visite des stations météorologiques automatiques dans la partie de l'immeuble réservée à la Direction générale des services centraux. Mais on a vite constaté que le succès de la visite dépendait du recrutement d'urgence d'un interprète travaillant de l'espagnol à l'anglais. Ces services furent fournis par un membre de la Direction générale des communications du SEA.

Après avoir quitté Downsview, cet ingénieur est allé visiter les Eaux intérieures, à Ottawa. Pendant son séjour dans la capitale nationale, il a bénéficié à temps plein des services d'un interprète des Affaires extérieures.



Pendant sa visite au Centre de formation en météorologie (CFM), à l'IFTC, à Cornwall, le 2 septembre, l'ADMA, Howard Ferguson, a pris le temps de rendre hommage à deux réalisations importantes.

Devant le personnel du CFM au complet qui constituait son auditoire, M. Ferguson a remis à Doug Tesch une médaille de long état de service en hommage à plus de 36 ans de service passés aux Opérations de prévisions (au SEA et au MDN) et à la Direction de la formation.
Le second prix qu'a remis M. Ferguson le fut à Ken Morris, qui représentait le personnel du CFM. Il s'agissait d'un prix de rendement du SEA remporté par le personnel "pour le dévouement et l'initiative manifestés dans la création d'un nouveau programme de formation en météorologie.) Au cours des 18 derniers mois, le personnel du Centre a de nouveau conçu et remanié 80 p. 100 du programme de formation technique de SEA et tous les documents connexes de cours. On a réalisé ce travail tout en maintenant l'exécution du programme permanent de formation au niveau normal.
De gauche à droite, sur la photo: Francis Bowkett, chef de la Formation technique, Ken Morris, directeur intérimaire du CFM, Doug Tesch, Howard Ferguson et Lloyd Berntsen, directeur de la Formation.

CHANGEMENT DE PERSONNEL / STAFF CHANGES

Nominations/Avancements Appointments/Promotions

P. Latremouille (AS-4) Chef, locaux et télécom./Head, Facilities and Telecomms. Mgt., AAGF, Downsview, Ont.

J. McIntyre (EG-5) Techn. en prés./Pres. Tech., Relève/Relief Pool/Edmonton, Alb./Alta.

A. Van de Mosselaer (EG-5) Techn. en prés./Pres. Tech., BM4/W04, Inuvik, T.N.-O./N.W.T.

A. Savoie (EG-1) Techn. en mét./Met. Tech., QAE00, SM3/WS3, Ste-Agathe, Qc/Que.

M. Lafrance (EG-1) Techn. en mét./Met. Tech., QAE00, SM3/WS3, Baie Comeau, Qc/Que.

M. Malépart (EG-6) Inspecteur/Inspector, QAE0I, St-Laurent, Qc/Que.

S. Armour (PE-2) Agent de classification/Classification Officer, AHRC, Downsview, Ont.

N. Zanatta (PE-3) Agent de relation du personnel/Staff Relations Officer, AHRR, Downsview, Ont.

M. Pyper (EG-1) Techn. en mét./Met. Tech., SM3/WS3, Fort McMurray, Alb./Alta.

T. Hawkins (EG-1) Techn. en mét./Met. Tech., SM3/WS3, Slave Lake, Alb./Alta.

J. Ross (EG-1) Techn. en mét./Met. Tech., SM3/WS3, Dease Lake, C.-B./B.C.

D. Smith (CR-2) Commis/Clerk, ACTD/AS, Downsview, Ont.

M. Grenier (CS-2) Programmeur/Programmer, CMCOA, Dorval, Qc/Que.

R. Plaseski (CS-3) Conseiller supér. du réseau/Sr. Network Advisor, OSD/ACPA, Downsview, Ont.

L. Reid (EG-6) Inspecteur/Met. Inspector, Bedford, N.-É./N.S.

J. Cossar (EG-6) Techn. en prés./Pres. Tech., BM4/W04, St. John's, T.-N./Nfld.

L. Wadman (EG-6) Techn. en prés./Pres. Tech., BM4/W04, St. John's, T.-N./Nfld.

H. Thoms (MT-5) Météorologiste/Meteorologist, BM4/W04, Gander, T.-N./Nfld.

I. Soule (MT-3) Météorologiste/Meteorologist, MWC, Bedford, N.-É./N.S.

J. Ross (EG-1) Techn. en mét./Met. Tech., SM3/WS3, Dease Lake, C.-B./B.C.

L. Mainwaring (EG-1) Techn. en mét./Met. Tech., Vancouver, C.-B./B.C.

G. Thompson (EG-7) Surveillant de quart/Shift Supv., Vancouver, C.-B./B.C.

D. Brown (EG-7) Surveillant de quart/Shift supv., Vancouver, C.-B./B.C.

B. Robilliard (EG-7) Surveillant de quart/Shift Supv., Vancouver, C.-B./B.C.

G. Browne (MT-3) Météorologiste/Meteorologist, ACTP/T, Downsview, Ont.

S. Knott (MT-3) Météorologiste/Meteorologist, ACTP/T, Downsview, Ont.

D. Barton (CS-2) Programmeur/Programmer, ARPX, Downsview, Ont.

D. Hung (CS-2) Programmeur/Programmer, ACPN, Downsview, Ont.

W. Windle (ST-OCE-3) Préposé, matériel de bureau/Office Equip. Operator, ARMF, Downsview, Ont.

A. Tremblay (SE-RES-2) Scientiste, recherche/Research Scientist, ARPP, Downsview, Ont.

W. Chang (CS-2) Programmeur/Programmer, ARMA, Downsview, Ont.

M. Dansereau (CS-3) Programmeur/Programmer, CIDS, Dorval, Qc/Que.

L. Bourdon (CS-1) Programmeur/Programmer, CIDX, Dorval, Qc/Que.

J. F. Gagnon (CS-3) Programmeur/Programmer, CIDS, Dorval, Qc/Que.

Mutations/Transfers

D. Munson (EG-5) Techn. en prés./Pres. Tech., Relève/Relief Pool, WAED, Edmonton, Alb./Alta.

M. Rice (EG-2) Techn. en mét./Met. Tech., SM3/WS3, Cape Parry, T.N.-O./N.W.T.

N. Searle (EG-4) Techn. en aér./U/A Tech., SM2/WS2, Norman Wells, T.N.-O./N.W.T.

C. Butara (ST-OCE-2) Préposé au matériel de bureau/Office Equip. Operator, AWPA, Downsview, Ont.

F. Gagnon (EG-2) Techn. en mét./Met. Tech., QAE00, SM3/WS3, Chibougamau, Qc/Que.

L. Paquin (EG-3) Techn. en aér./U/A Tech., SM1/WS1, Maniwaki, Qc/Que.

D. Lahn (EG-4) Techn. en aér./U/A Tech., Relève/Relief Pool, WAED, Edmonton, Alb./Alta.

C. Powell (EG-2) Techn. en mét./Met. Tech., SM3/WS3, Cape St. James, C.-B./B.C.

D. House (EG-1) Techn. en mét./Met. Tech., SM3/WS3, Cape St. James, C.-B./B.C.

J. Durham-Reid (EG-2) Techn. en mét./Met. Tech., Vancouver Harbour, C.-B./B.C.

D. M. Grant (AS-3) Gestion, directionnaire/Branch Administrator, ACPE, Downsview, Ont.

E. Ranti (CS-3) Chef, de projet/Project Leader, OSD/ACPS, Downsview, Ont.

D. Wartman (MT-5) Météorologiste/Meteorologist, MWC, Bedford, N.-É./N.S.

R. Cormier (MT-5) Météorologiste/Meteorologist, BM4/W04, Gander, T.-N./Nfld.

J. Mader (EG-6) Techn. en prés./Pres. Tech., BM4/W04, Yarmouth, N.-É./N.S.

J. V. Leblanc (EG-6) Techn. en prés./Pres. Tech., BM4/W04, Halifax, N.-É./N.S.

M. Moreau (MT-3) Météorologiste/Meteorologist, PWC, Vancouver, C.-B./B.C.

M. Gelinas (MT-2) Niv. perf. mét./Met. Dev. Level, PWC, Vancouver, C.-B./B.C.

M. Falardeau (CS-2) Programmeur/Programmer, Ice Branch, Ottawa, Ont.

P. Pearson (ST-OCE-3) Préposé au matériel de bureau/Office Equip. Operator, ARMA, Downsview, Ont.

H. Le (CS-2) Programmeur/Programmer, CCAH, Downsview, Ont.

A. Malhotra (DA-PRO-3) Surv. opérations/Operations Control Oper., ACPO/OPS, Downsview, Ont.

A. Tweddell (DA-PRO-3) Opér. Contrôle des opérations/Operations Control Oper., ACPO/OPS, Downsview, Ont.

L. A. Ketch (MT-6) Surveillant de quart/Shift supv., MWC, Bedford, N.-É./N.S.

G. Rockwell (EG-6) Techn. en prés./Pres. Tech., BM4/W04, Halifax, N.-É./N.S.

R. Perron (MT-2) Niv. perf. mét./Met. Dev. Level, MWC, Bedford, N.-É./N.S.

K. Ayotte (MT-2) Niv. perf. mét./Met. Dev. Level, MWC, Bedford, N.-É./N.S.

A. George (EG-6) Techn. en prés./Pres. Tech., BM4/W04, Yarmouth, N.-É./N.S.

R. Tourigay (MT-2) Niv. perf. mét./Met. Dev. Level, NWC, Gander, T.-N./Nfld.

C.4

Chinook

THE CANADIAN MAGAZINE OF WEATHER AND OCEANS

LA REVUE CANADIENNE DE LA MÉTÉO ET DES OCÉANS

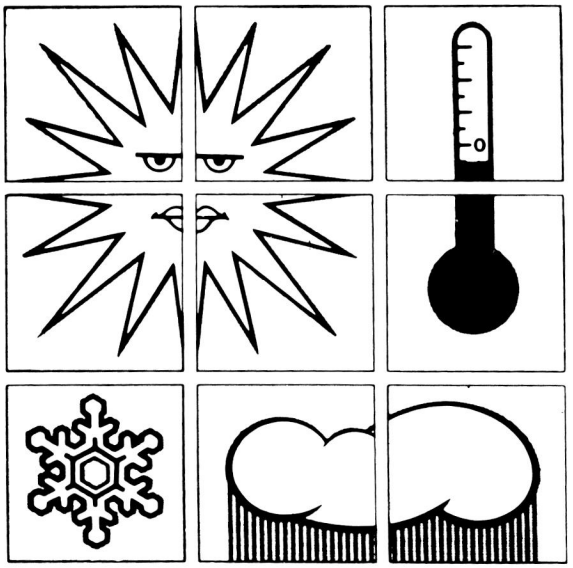
VOL. 10 NO. 1

WINTER/HIVER 1988









Supply and Services Canada
Canadian Government Publishing Centre

Approvisionnements et Services Canada
Centre d'édition du gouvernement du Canada

Learning Weather . . .

A resource study kit suitable for students grade seven and up, prepared by the Atmospheric Environment Service of Environment Canada

Includes new revised poster-size cloud chart

Découvrons la météo . . .

Pochettes destinées aux élèves du secondaire et du collégial, préparées par le Service de l'environnement atmosphérique d'Environnement Canada

Incluant un tableau révisé descriptif des nuages

Learning Weather
A resource study kit, contains:

1. **Mapping Weather**
   A series of maps with exercises. Teaches how weather moves. Includes climatic data for 50 Canadian locations.
2. **Knowing Weather**
   Booklet discusses weather events, weather facts and folklore, measurement of weather and several student projects to study weather.
3. **Knowing Clouds**
   A cloud chart to help students identify various cloud formations.

Cat. No. EN56-53/1983-E **Each kit $4.95**

Order kits from:
CANADIAN GOVERNMENT PUBLISHING CENTRE
OTTAWA,
CANADA, K1A 0S9

Découvrons la météo
Pochette documentaire comprenant:

1. **Cartographie de la météo**
   Série de cartes accompagnées d'exercices. Décrit les fluctuations du temps et fournit des données climatologiques pour 50 localités canadiennes.
2. **Apprenons à connaître la météo**
   Brochure traitant d'événements, de faits et de légendes météorologiques. Techniques de l'observation et de la prévision de la météo. Projets scolaires sur la météorologie.
3. **Apprenons à connaître les nuages**
   Tableau descriptif des nuages aidant les élèves à identifier différentes formations.

Cat. N° EN56-53/1983F **Chaque pochette : 4,95 $**

Commandez les pochettes au :
CENTRE D'ÉDITION DU GOUVERNEMENT DU CANADA
OTTAWA (CANADA) K1A 0S9

Order Form (please print)

Please send me ____ copy(ies) of Learning Weather at $4.95 per copy. TOTAL $_____. Cat. No.: EN56-53/1983E.

Name
School
Address City
Province Postal Code
☐ Account No. ☐ Enclosed $
☐ Visa
☐ Master Card
Expiry Date Bank
Signature

Orders prepaid by postal money order or cheque must be made to the order of the Receiver General for Canada and addressed to the Canadian Government Publishing Centre, Ottawa (Canada) K1A 0S9. Also available through authorized bookstore agents or your local bookseller. Add 20% to prices for books to be shipped outside Canada. Payable in Canadian funds.

Également disponible en français: "Découvrons la météo"
N° de cat.: EN56-53/1983F.

Bon de commande

Veuillez m'expédier _____ exemplaire(s) de la pochette "Découvrons la météo" à 4,95 $ la copie. N° de cat. EN56-53/1983F.

Nom
Adresse
Ville
Province Code postal
☐ Ci-joint $ N° de compte
☐ Visa
☐ Master Card
Date d'expiration
Banque
Signature

Les commandes sont payables à l'avance par chèque ou mandat fait à l'ordre du Receveur général du Canada et doivent être adressées au Centre d'édition du gouvernement du Canada, Ottawa (Canada) K1A 0S9. En vente aussi chez les agents libraires agréés ou chez votre libraire.

Téléphone (819) 997-2560 Télex 053-4296

Also available in English: "Learning Weather" *Cat. No. EN56-53/1983E*

Canada

FROM THE EDITOR'S DESK

A new year has started and with that a new volume of *Chinook,* which is also the tenth volume of our publication. Thanks to Mike Newark who had the foresight and energy to recognize the need in Canada for a popular magazine dealing with the weather and oceans.

Looking back over the first six years, we must note the tremendous amount of effort that Mike gave to his favourite project. We thank him for keeping the dream alive – under difficult circumstances – and for allowing the Society to carry on with *Chinook* from 1984 to the present.

I know that I speak on behalf of the Society, the Board members, and more specifically on behalf of the editorial team, in expressing satisfaction with our progress to date. It has not been easy, but it has been most satisfying.

In this issue we are offering some insights into two of the most destructive forces in nature: forest fires and tornadoes. Forest fires consume millions of dollars of valuable timber in the vast forest regions extending from the Pacific to the Atlantic coast. Tornadoes often strike with little warning. We offer you a view from the forcaster's desk of the horrible 90 minutes that occurred in Edmonton on July 31, 1987.

At the Editor's desk we would very much like to hear from you. We look forward to your comments and contributions.

Hans VanLeeuwen

LETTERS

The Dutch Armada of 1688

I have read with interest and pleasure the paper "Flavit et Dissipati Sunt ..." by H.H. Lamb and C. Loader, published in the Spring 1987 issue of your journal.

In 1988 will be the 400th Anniversary of the attempted attack on England by the Spanish Armada. But there will be another important Anniversary in the same year: The 300th Anniversary of the "descent" on England by the Prince of Orange – the future William III.

I attach herewith a copy of a paper* joint with S. Lindgrén on the meteorological aspects of the "descent" and the historical situation in England that brought the Prince of Orange over to England.

J. Neumann
Department of Meteorology
Copenhagen University

*Great Historical Events That Were Significantly Affected by the Weather: 7, "Protestant Wind"—"Popish Wind": The Revolution of 1688 in England. *Bulletin of the American Meteorological Society*, Vol. 66, 634–644 (1985).

Chinook

Winter / Hiver 1988 Vol. 10 No. 1

FROM THE EDITOR'S DESK	3
LETTERS	3
FOREST FIRE METEOROLOGY *By Roger B. Street*	4
FORECASTER TELLS EDMONTON TORNADO STORY *By Garry Atchison*	8
THE PATH OF DESTRUCTION *By Al Wallace*	13
TOM TAYLOR, TORNADO HERO	14
UNDERSTANDING CO_2 AND CLIMATE	15
SUMMER OF '87 IN REVIEW *By Amir Shabbar*	17

EDITORIAL BOARD / CONSEIL DE RÉDACTION

Barry Grace
Agriculture Canada Research Branch
Lethbridge, Alberta

Yves Gratton
Université du Québec à Rimouski
Rimouski, Québec

Paul H. LeBlond
The University of British Columbia
Vancouver, British Columbia

Richard Leduc
Ministère de l'environnement
Québec, Québec

John W. Loder
Bedford Institute of Oceanography
Dartmouth, Nova Scotia

John Maybank
Saskatchewan Research Council
Saskatoon, Saskatchewan

David W. Phillips
Atmospheric Environment Service
Downsview, Ontario

Jerry Salloum
Don Mills Collegiate
City of North York, Ontario

Hans VanLeeuwen (Chairman)
Atmospheric Environment Service
Downsview, Ontario

EDITOR Hans VanLeeuwen RÉDACTEUR
TECHNICAL EDITOR Edward J. Truhlar RÉDACTION TECHNIQUE
BUSINESS MANAGER J. Carr McLeod GESTIONNAIRE
ART WORK Bill Kiely / Joan Badger ILLUSTRATION
TRANSLATION Joanne Gagnon Pacini / Gilles Tardif TRADUCTION
FOUNDER AND EDITOR 1978–1984 Michael J. Newark FONDATEUR ÉDITEUR 1978–1984

ISSN 0705-4572

Published by:
Canadian Meteorological and Oceanographic Society

Publié par:
La Société canadienne de météorologie et d'océanographie

Printed and produced in Canada and published quarterly by the Canadian Meteorological and Oceanographic Society, Suite 903, 151 Slater Street, Ottawa, Ont. K1P 5H3. Annual subscription rates are $10.00 for CMOS members, $12.00 for non-members and $15.00 for institutions.

Contents copyright © the authors 1988. Copying done for other than personal or internal reference use without the expressed permission of the CMOS is prohibited. All correspondence including requests for special permission or bulk orders should be addressed to *Chinook* at the above address.

Second Class Mail Registration No. 4508
Winter 1988 Date of issue – March 1988

Edité et imprimé au Canada. *Chinook* est publié tous les trois mois par la Société canadienne de météorologie et d'océanographie, Suite 903, 151, rue Slater, Ottawa (Ontario) K1P 5H3. Les frais d'abonnement annuel sont de 10,00 $ pour les membres de la SCMO, de 12,00 $ pour les non-membres et de 15,00 $ pour les institutions.

Les auteurs détiennent le droit exclusif d'exploiter leur oeuvre littéraire (© 1988). Toute reproduction, sauf pour usage personnel ou consultation interne, est interdite sans la permission explicite de la SCMO. Toute correspondance doit être envoyée au *Chinook* à l'adresse ci-dessus, y compris les demandes de permission spéciale et les commandes en gros.

Courrier de deuxième classe – enregistrement n° 4508
Hiver 1988 Date de parution – mars 1988

COVERS

Details about the front and back covers illustrating two of the atmosphere's most devastating phenomena and their impacts are given in the articles on forest fire meteorology and the Edmonton tornado.

COUVERTURES

Les pages couvertures illustrent deux des phénomènes atmosphériques les plus dévastateurs; des détails sur ces phénomènes sont présentés dans l'article sur la météorologie et les incendies de forêt, et celui sur la tornade d'Edmonton.

FOREST FIRE METEOROLOGY

by Roger B. Street

Fire is a natural recurring phenomenon within Canada's forested areas. Our boreal forest regions in particular are dominated by tracts of even-age stands that attest to the relationships between our forests and fire. An analysis of the losses associated with forest fires during the period 1970–1985 (see Table 1) yields the relative frequencies of fires in Canada.

The inception, growth and behaviour of forest fires are closely linked to meteorological and climatic phenomena, forest fuels and topographic features. This complex has been labelled "the fire environment". A close relationship exists between the various factors of the fire environment, whose spatial and temporal variations occur in a dynamic and integrated fashion. However, the atmosphere plays the dominant role. This is reflected by its incorporation into all phases of forest fire management: presuppression, preparedness, prevention, suppression, prescribed burning, and natural fires. Information on the past, present and future states of the atmosphere is (or should be) an integral part of all fire management activities. This is due to the natural links that exist between weather and forest fires, including the exchange of water between the atmosphere and the forest fuels, ignition, and the combustion and the propagation processes.

In fire management there is a distinct advantage to be gained from being able to anticipate, well in advance, the forest fire hazard and the probable behaviour of burning fires. This capability is met, in part by meteorological information systems, by fire weather forecasts, and by the operation of the Canadian Forest Fire Danger Rating system (Charles Van Wagner, 1974). Recognition of the warning signs of a potentially dangerous situation, or of conditions that would not allow a particular fire management strategy to meet its objective, is necessary so that fire management plans can be successful.

The weather conditions that are conducive to rapid fire spread are strong winds, low relative humidities, high temperatures, and deficient rainfall. These critical fire weather conditions are normally associated with particular surface weather systems and upper-air patterns. If periods of critical fire weather can be recognized and monitored by means of their relationships with synoptic weather patterns, preparations can be made to counter a possible disaster and to reduce the amount of damage.

Table 1 Forest fire statistics for Canada (Gordon S. Ramsey and Douglas G. Higgins, 1986).

Year	Number of Fires	Area Burned (hectares)
1985	9,357	757,260
1984	9,568	765,382
1983	8,930	1,194,175
1982	8,941	1,697,591
1981	10,145	5,413,365
1980	8,973	4,822,167
1979	9,793	2,700,785
1978	7,928	289,417
1977	8,888	1,483,194
1976	10,161	1,813,825
1975	10,995	1,032,034
1974	8,035	848,674
1973	7,503	1,184,283
1972	8,153	780,037
1971	9,125	1,695,013
1970	9,253	1,058,843

Certain characteristics of the upper-air flow are closely related to periods of critical fire weather. Those upper-air features that divert (or block) the flow of moisture or cooler air or both away from a particular area may pose a threat to that area's fire weather.

A comparison between monthly fire statistics for 1953–1980 as compiled by James Harrington in 1982 and corresponding weather features shows a relationship between the areas burned and specific weather patterns. This analysis revealed that during the months when the area burned in northwestern Ontario was significantly greater than the average a prominent weather feature was situated over the Prairie Provinces and/or over northwestern Ontario, which prevented the influx of atmospheric moisture into northwestern Ontario. In addition, this type of weather pattern sustained a flow of warm, dry air at the surface into northwestern Ontario from the south-central United States, which in turn heightened the probability of a severe forest fire.

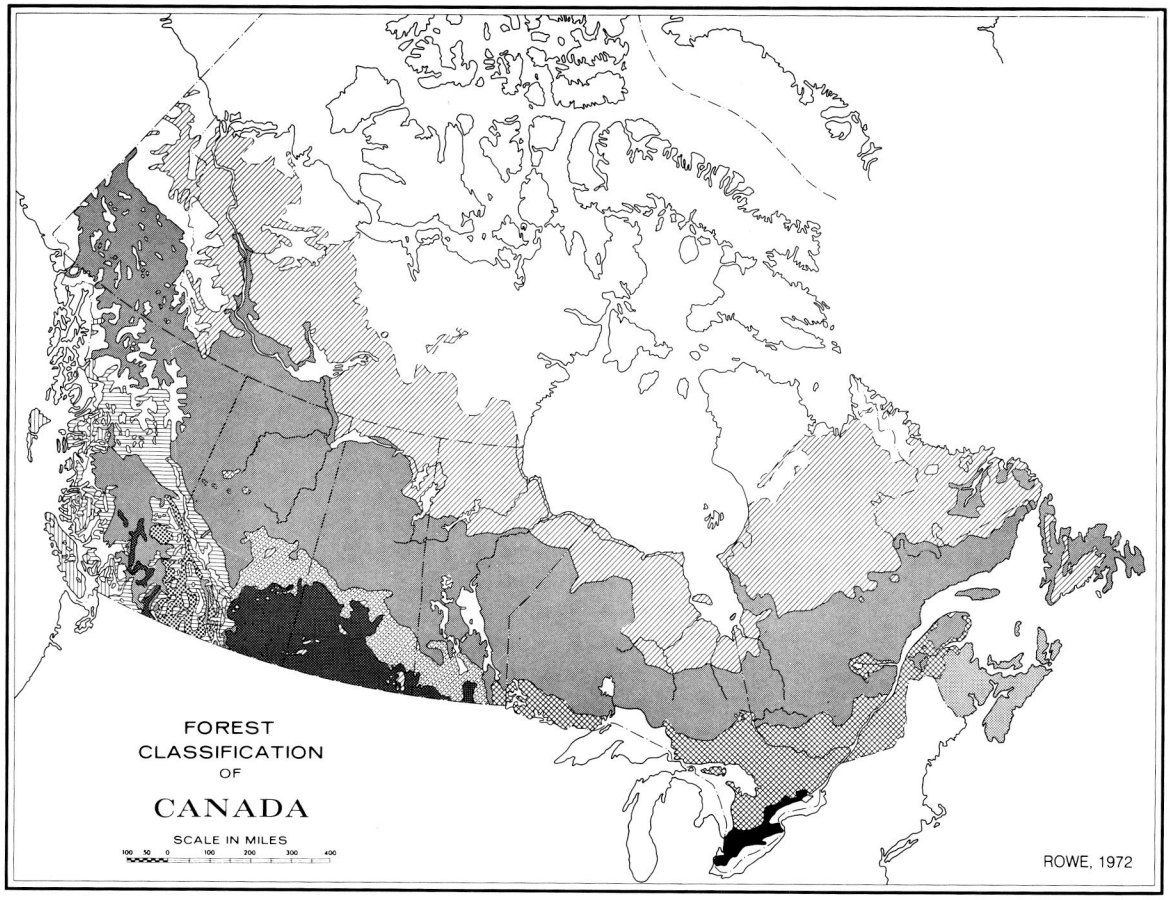
Particular weather features are synonymous with severe fire weather. George Byram in a 1954 study of atmospheric conditions that accompanied a number of extreme fire events determined that fires seem most likely to blow up when the following conditions exist simultaneously:

- Fuels are dry and plentiful.
- The atmosphere either is unstable or was unstable for some hours and possibly days prior to the fire.
- The wind speed is 29 km/h or more at an elevation equal to or not much higher than the elevation of the fire.
- The wind speed decreases with height for several thousand metres above the fire with the possible exception of the first hundred metres.

Byram's analysis revealed numerous cases of explosive fire behaviour that were associated with wind speeds decreasing with height and on this basis he suggested a rather simple classification of wind profiles that were related to fire behaviour. The most dangerous types had winds in excess of 29 km/h at or just above the fire, and a marked decrease of wind with height above this layer. In a detailed analysis in 1964 of weather features associated with criti-



A Canadair CL-215 water bomber attacking a northern Ontario fire.



FOREST REGIONS	PRINCIPAL TREE SPECIES
Boreal	
Predominantly Forest	Spruce, balsam fir, aspen, white birch, jack pine
Forest and Grassland	Aspen
Forest and Barren	Spruce
Subalpine	Engelmann spruce, lodgepole pine, alpine fir
Montane	Lodgepole pine, aspen, spruce, Douglas fir
Coast	Douglas fir, hemlock, Sitka spruce

FOREST REGIONS	PRINCIPAL TREE SPECIES
Columbia	White pine, larch, Douglas fir, spruce
Deciduous	Maple, beech, tulip - tree, walnut etc.
Great Lakes - St. Lawrence	Maple, beech, white pine, yellow birch, hemlock
Acadian	Spruce, balsam fir, birch, maple, beech, pine
Grassland	
Tundra	

cal fire weather in the United States George Schroeder and others of the U.S. Forest Service found that the highest fire potential occurred in the peripheries of high-pressure areas in the vicinity of dry, cold fronts.

By examining a number of fire histories, Edward Brotak and William Reifsnyder in a 1976 study showed that the weather patterns associated with major fires were similar to those that usually produce precipitation and poor fire conditions. The reason for the lack of precipitation just before and during an extreme fire weather situation appeared to be a deficiency of moisture in the air over the affected area. They examined moisture advection (i.e., the horizontal moisture transport into an area) at low levels of the atmosphere (85 kPa) and found that in the vast majority (93%) of the fires, lack of low-level moisture advection was the major factor contributing to the development of large fires.

Moisture advection depends primarily on wind flow patterns and moisture sources. For areas in eastern and central North America the major sources of moisture are the Gulf of Mexico and the Atlantic Ocean. The lack of moisture advection at low levels for most of the fire runs studied by Brotak and Reifsnyder was due to a zonal flow pattern over the area of the fire. Flows with a more southerly or easterly trajectory (i.e., from the moisture sources) were found to be unfavourable for fire runs. In the western part of the continent, a zonal flow would be unfavourable for fire runs since the air would flow from a moisture source (Pacific Ocean and/or Gulf of Alaska). However, a flow pattern that was strongly meridional would normally result in poor moisture advection, i.e., favourable for fire runs, over western Canada.

The surface weather features normally associated with a critical fire weather situation are the dry, cold front and the high-pressure area, in particular its peripheries. These features are favourable for major fire runs (rapidly spreading fires) because they are the areas where high wind speed and turbulence, low relative humidities and lack of rainfall can be found. Edward Brotak and William Reifsnyder in their 1976 survey of 52 major wildland fires found that "...more than half of all fire runs occurred following the passage of a dry, cold front ... with most runs occurring in the southeastern section of the frontal region" (Figure 1). They concluded that this is the primary area in which the proper combination of wind speed, moisture, temperature and fuel conditions are found. According to these investigators, "One quarter of the runs occurred prior to the passage of a cold front. Often, fires would make a run both ahead of and behind the front. Thus, three quarters of the fire runs were frontal situations".

About 12% of the fire runs examined by Brotak and Reifsnyder occurred in the warm sectors of low-pressure areas, while 5% were associated with high-pressure areas situated far from any fronts or low-pressure areas. Usually, these high-pressure areas originated in low latitudes and had very high temperatures and extremely low relative humidities. Four fire runs (5%) occurred

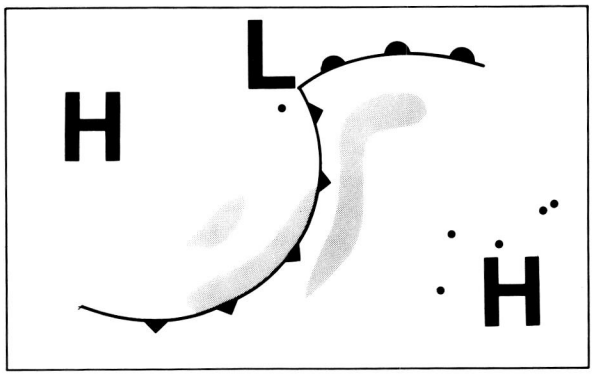


Figure 1 Idealized surface weather map showing preferred areas (shaded) and locations (dots) of major fire runs (Brotak and Reifsnyder, 1976).

with other than a dry, cold front or high-pressure area as their dominant surface weather feature.

As outlined by George Byram, an unstable or recently unstable atmosphere is one of the conditions normally associated with severe fire weather. This relationship is mainly due to the turbulent winds usually associated with atmospheric instability, which can cause forest fires to build up very rapidly and to behave erratically. However, the existence of a stable layer near the ground can also produce hazardous fire weather. Two phenomena that can result in some of the most dramatic effects of stability on fire behaviour are the nocturnal and subsidence inversions. Fires burning within stable air are usually slow moving and easily controlled, however, they are potentially dangerous. When the inversion (stable layer) is shallow, it may dissipate quickly by convection from below induced by the sun's radiation or the fire itself. Once the inversion is broken down, the turbulent energy that was isolated above the inversion is released and is suddenly made availabe to the fire. Explosive increases in the aggressiveness and rate of spread of fires are at times ascribed to this mechanism.

Associated with surface high-pressure systems and their divergent flow is a sinking of the overlying atmosphere. This sinking from aloft is the common form of subsidence. Because of its origin, subsiding air in the upper troposphere is usually very dry (relative humidities typically 2–5%) and warm. If this air reaches the surface the effect on fuel moisture and fire behaviour is dramatic, resulting in a potentially critical fire weather situation.

Subsiding air seldom reaches the surface as a broad layer, but more often sinks to the lower troposphere and stops. Some transport mechanism is then required to bring this dry, subsiding air down to the surface: one effective means is the convection current associated with daytime heating. The upward moving air and the compensating downward currents transport the dry air downward, causing it to mix with the air in the layer below the subsidence inversion. Although the resulting air is not as dry as the pure subsiding air, it still has a very low relative humidity and remains quite warm.

The relation between fire behaviour and the weather that precedes and occurs during a fire can be illustrated by examining in detail a fire that occurred in the Fort Frances, Ontario, area during 1981. A major weather system situated over the Prairie Provinces dominated the northwestern Ontario weather in the weeks preceding the ignition date. This system directed warm, dry air into the area and was instrumental in the earlier than normal spring snowmelt throughout northwestern Ontario. Both Kenora and Fort Frances reported no snow on the ground at the end of March. Precipitation was well below normal at Kenora during the months of April and May (32% and 13% of normal, respectively), while mean daily temperatures and hours of bright sunshine were well above their seasonal normals. This combination of meteorological factors and the resulting fuel mixture created a fire climate in the Fort Frances area in late May that would support extremely fast fire growth and spread.

The fire was detected on May 20, 1981, burning in logging slash about 45 km north-northeast of Fort Frances. On May 20 and 21, 1981 (Figure 2) a surface low-pressure system over southwestern Canada strengthened and moved slowly eastward across the Northern Plains of the United States. At the same time, a surface high-pressure system encompassing the Great Lakes remained almost stationary. This relative positioning of weather systems was responsible for the fire escaping the initial firefighting efforts or "attack" by firefighting crews and its growing to about 900 hectares, mainly in cutover, by the evening of May 20. The motion of the western low-pressure centre relative to the Great Lakes high-pressure cell produced a tightening of the surface pressure gradient and a strengthening of the winds over the area between the two systems. In addition, the east-west air temperature gradient in the lower layers over the central United States, set up by surface heating of the air over

FRONT COVER

The upper illustration is a satellite image as received from the U.S. NOAA-9 satellite at 2143 GMT on May 8, 1987. The image is shown in false colours indicating the various terrain, vegetation, cloud, and smoke regimes. Lakes Winnipeg and Manitoba are clearly delineated, as well as the urban sprawl of Winnipeg (southwest of the southern tip of Lake Winnipeg). The most striking features are the forest fires over central Saskatchewan (upper left corner) and central Manitoba, the two fires east of the northern part of Lake Winnipeg, and the one farther south on the Ontario-Manitoba border. The image presents a dramatic view of the long plumes of smoke that are carried eastward with the west-northwesterly upper flow in the atmosphere. (Photo credit: AES Satellite Laboratory, Downsview, Ontario).

The lower pictures show destructive flames shooting high in the sky consuming valuable timber in a fire at Red Lake, Ontario, and an internal view of the forest inferno (Photos: Brian J. Stocks).

COUVERTURE AVANT

Image supérieure. Photo reçue du satellite américain NOAA-9 à 2143 TMG, le 8 mai 1987. Les fausses couleurs indiquent les diverses configurations du terrain, de la végétation, des nuages et de la fumée. Les lacs Winnipeg et Manitoba sont parfaitement visibles, de même que la ville de Winnipeg (au sud-ouest de l'extrémité sud du lac Winnipeg). Les aspects les plus remarquables de la photo sont les incendies de forêt sur le centre de la Saskatchewan (coin supérieur gauche), sur le centre du Manitoba, les deux incendies à l'est du secteur nord du lac Winnipeg et, enfin, plus au sud, l'incendie à la frontière Manitoba-Ontario. On peut voir les longues plumes de fumée se déplaçant vers l'est poussées par les courants atmosphériques ouest-nord-ouest. (Photo : Laboratoire de données satellitaires, Downsview, Ontario)

Images inférieures. Flammes dévastatrices jaillissant haut dans le ciel et qui consument des boisés de grande valeur à Red Lake, Ontario. La forêt infernale vue de l'intérieur. (Photos : Brian J. Stocks)

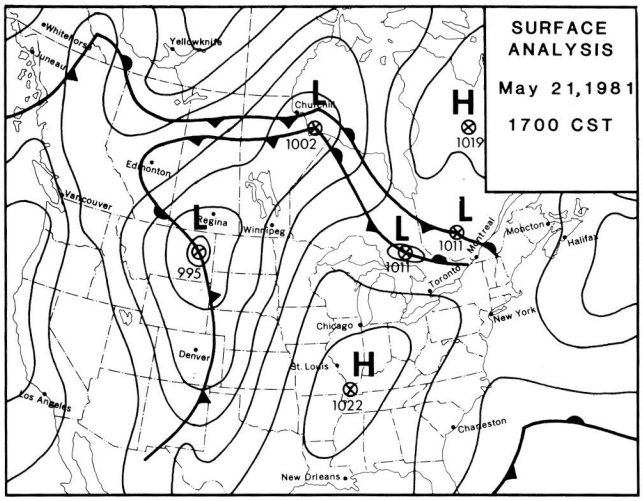


Figure 2 Surface weather map valid for May 21, 1981 at 1700 CST. The location of Fort Frances in Ontario is indicated on the map by a stylized flame.

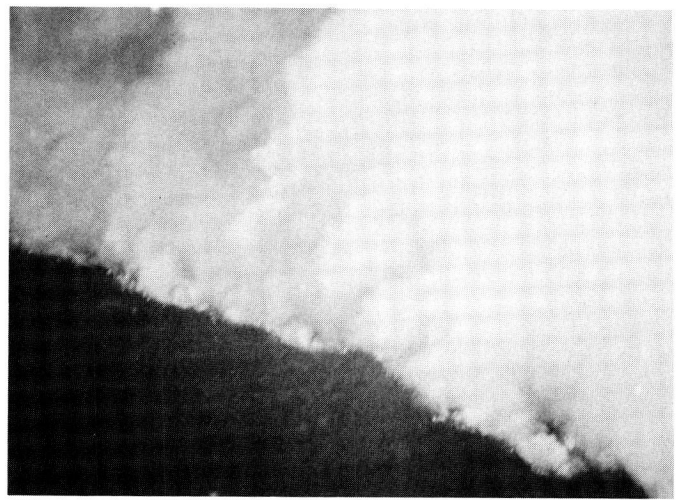


Figure 3 Photograph of a forest fire burning in northwestern Ontario (Photo: L.G. Huberdeau).

the U.S. Plains, enhanced the southerly flow.

On May 21, driven by gusty southerly winds, this fire ran 22 kilometres in standing timber, reaching a final size of 13,665 hectares. The fire spread at an average rate of 2.4 km/h during the afternoon of May 21, 1981.

The continued eastward progression of the surface low-pressure system spread cloud and widespread precipitation (10.8 mm) into the Fort Frances area on May 22. The precipitation continued on May 23, 24 and 25 and a total of 25.8 mm was recorded at Fort Frances during the three days, ending the fire's spread and allowing suppression crews to bring it under control.

Uncontrolled forest fires (Figure 3) are a reality of life in Canadian forests. The dominant role played by meteorological and climatic phenomena relative to the other factors that make up the fire environment are obvious to those involved in forestry activities, in particular, fire management. This article has explained some of these relationships, however, for a more detailed discussion of this topic, the reader is urged to consult the list of publications that follows.

FURTHER READING

Atmospheric Environment Service, 1983: Forest Fire Management–Meteorology. A Training Manual (2nd Edition). Downsview, Ont., 261 pp.

Brotak, E.A. and W.E. Reifsnyder, 1976: Synoptic Study of the Meteorological Conditions Associated with Extreme Wildland Fire Behaviour. Preprints, Fourth Conference on Fire and Forest Meteorology, 16–18 November 1976, St. Louis, Mo., American Meteorological Society, pp. 66–69.

Brown, A.A. and K.P. Davis, 1973: *Forest Fire Control and Use.* McGraw-Hill Book Company, Toronto and New York, 686 pp.

Byram, G.M., 1954: Atmospheric Conditions Related to Blow-up Fires. Station Paper No. 35, USDA Forest Service, Southeastern Forest Experiment Station, Asheville, N.C., 34 pp.

Harrington, J.B., 1982: A Statistical Study of the Area Burned by Wildfire in Canada 1953–1980. Seventh Conference on Fire and Forest Meteorology, 25–28 April 1983, Fort Collins, Colo., American Meteorological Society, pp. 147–152.

Ramsey, G.S. and D.G. Higgins, 1986: Canadian Forest Fire Statistics. Information Report P1-X-49 E, Petawawa National Forestry Institute, Chalk River, Ont. 148 pp.

Rowe, J.S., 1972: Forest Regions of Canada. CFS Publication No. 1300, Department of the Environment, Ottawa, Ont.

Schroeder, M.J. et al., 1964: Synoptic Weather Types Associated With Critical Fire Weather. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, Calif., 492 pp.

Turner, J.A. and B.D. Lawson, 1978: Weather in the Canadian Forest Fire Danger Rating System: User Guide to National Standards and Practices. Information Report BC-X-177, Canadian Forestry Service, Pacific Forest Research Centre, Victoria, B.C., 40 pp.

Van Wagner, C.E., 1974: Structure of the Canadian Forest Fire Weather Index. Information Report PS-X-55, Petawawa Forest Experiment Station, Canadian Forestry Service, Chalk River, Ont., 44 pp.

Roger Street is the Superintendent of the Bioclimate Section of the Canadian Climate Centre and is responsible for applications and climate studies related to forest and agricultural meteorology.

RÉSUMÉ *La fréquence des incendies de forêt au Canada demande des chefs de lutte une compréhension des facteurs qui affectent l'apparition et le comportement de ceux-ci. Les conditions météorologiques jouent un rôle dominant parmi les facteurs (météo, topographie et combustible) qui contrôlent les incendies. Cette étude démontre comment la météo influence les incendies de forêt. Les conditions critiques responsables (vent fort, basse humidité relative, température élevée et manque de pluie) d'une propagation rapide des incendies sont normallement associées à des systèmes météo de surface et des configurations d'altitude caractéristiques. Par exemple, un front froid sec et une zone de haute pression sont favorables au développement d'incendies majeurs; par contre, les configurations de vent transporteur d'humidité provenant des sources océaniques ne le sont pas. L'instabilité atmosphérique est habituellement associée aux propagations les plus importantes. On examine l'historique d'un incendie en fonction des conditions météo associées afin d'illustrer la force du rapport incendie de forêt-conditions météorologiques.*

FORECASTER TELLS EDMONTON TORNADO STORY

by Garry Atchison

The tragic Edmonton tornado of July 31, 1987 was the worst experienced in the city during 97 years of observations. The death toll was 27 and damage was estimated at $250 million.

The last ten days of July 1987 were exceedingly hot and humid in Alberta. Record highs from 31 to 37°C were set at several sites. The dew-point temperatures – a basic measure of humidity, which averages 10°C in an Alberta summer – were reaching the 17 to 21 range during the last week of July. The Alberta Weather Centre had issued severe thunderstorm watches and warnings almost every day for some regions of the province. Subsequent damage reports confirmed the daily development of these storms with damaging winds, large hail, torrential downpours and record levels of lightning.

On Thursday, July 30, two bands of severe thunderstorms developed late in the day and crossed the Edmonton region; the first affected the city and the later one passed to the north during the night. The daily count from the lightning detection system exceeded 40,000 cloud-to-ground strikes, a new record. Arrangements were being made to personally check a report of tornado damage from a weather watcher about 100 km out of Edmonton if Friday's workload would permit.

By Friday morning all watches and warnings had been terminated and skies were practically clear (see weather map, Figure 1). At least one radio announcer scoffed at the 5 a.m. forecast of 80% probability of "thunderstorms at times heavy." After the 7 a.m. shift change, the day shift, which includes the severe weather forecaster, considered the possibility that the worst threat was over since the surface temperatures and dew points were both lower, and the cloud pattern over Saskatchewan suggested that the more dangerous tropical air mass had moved eastward; i.e., that Thursday's action had been related to a weak cold front. However, the usual detailed analysis of the current state of atmospheric stability showed that a good potential for severe thunderstorms remained.

The computer models looked reasonable in pushing a cooling upper trough into southern Alberta late in the day. This development would mean that the high-level jet stream that started the day over eastern British Columbia

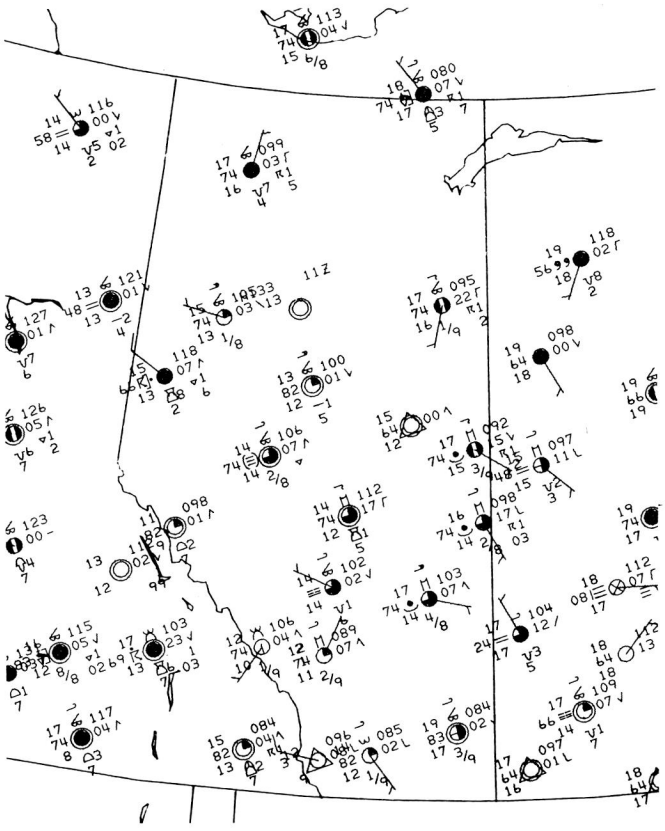


Figure 1 Surface weather plots for July 31, 1987, 1200 GMT (0600 MDT). (To decode the data plotted around each weather station, see *Chinook* Vol. 8 No. 2.)

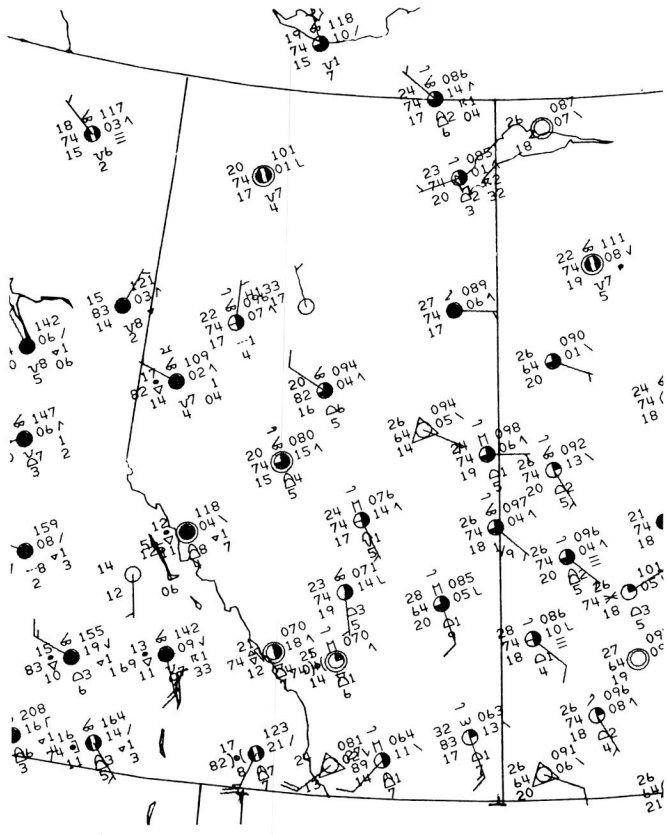
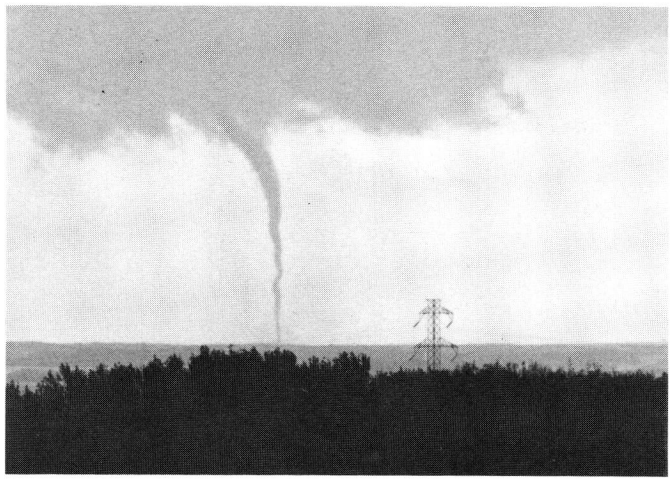


Figure 2 Surface weather plots for July 31, 1987, 1800 GMT (1200 MDT).





Figures 3 and 4 Initial sightings of the rope-like tornado near Beaumont, south of Edmonton (photo: Tom Taylor).

would shift into a south-north core over central Alberta by evening.

At the 10:15 a.m. forecast team consultation, the forecast of thunderstorms was confirmed for most regions, with a large area of severe thunderstorm potential from the southeastern Peace River district to Medicine Hat, including Edmonton, Red Deer and Calgary.

By 11:15 a.m. beeps from the lightning detection unit confirmed that thundershowers had formed over the southern Rockies. A Severe Weather Watch was issued for the Calgary and Red Deer regions.

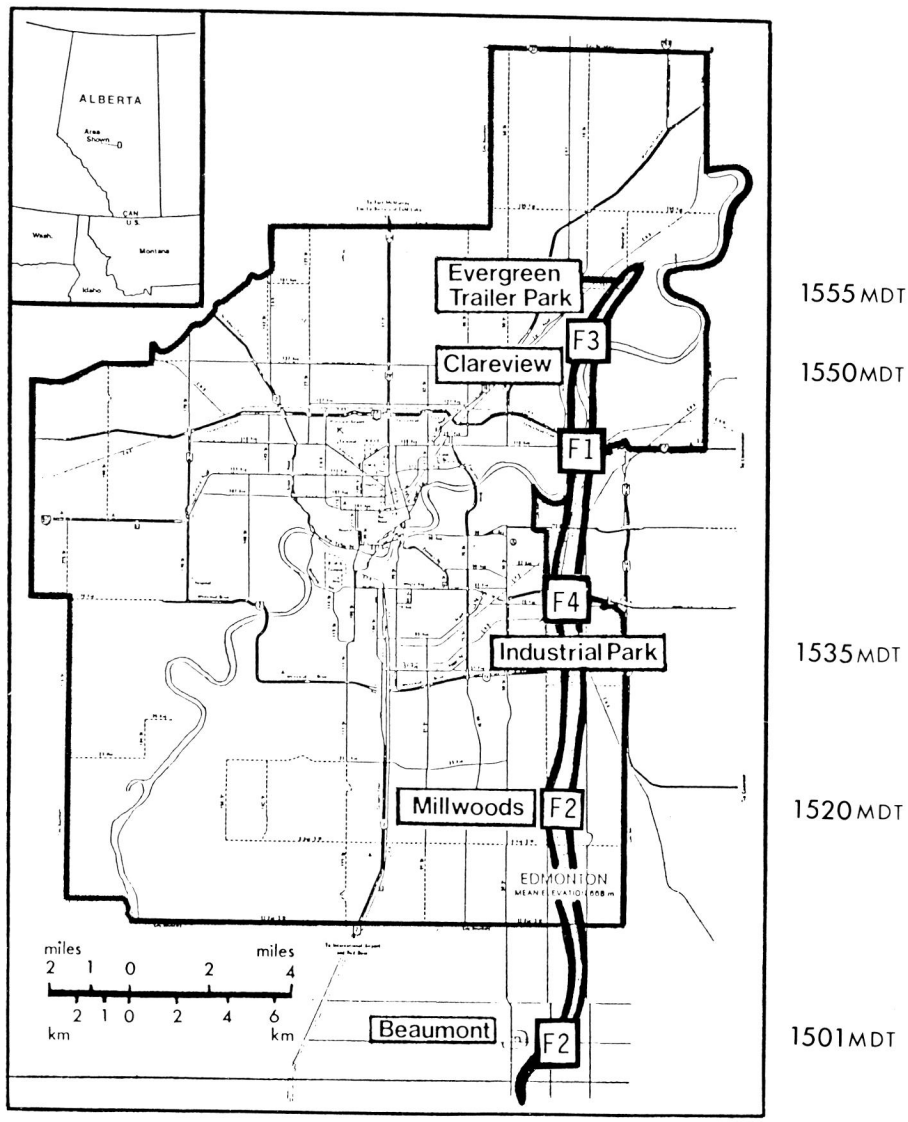
After the lightning developed northward, and weather radar and satellite imagery confirmed cumulonimbus development oriented NNW–SSE over the foothills north of Sundre, confidence rose that the severe thunderstorms forecast earlier were likely to materialize (weather map, Figure 2).

Though low-level wind flows showed an increasing southerly flow, the radar showed motion of the cells from a southwesterly direction at the surprisingly high speed of 60 to 70 km/h. That would bring them near Edmonton.

By 1:40 p.m. when the radar echoes showed tops approaching 10 km and a sustained echo strength at the second highest value, the weather watch was extended to Edmonton and adjoining regions.

By 2:45 p.m. an acceleration to 80 km/h and tops rising to 12 km were considered sufficient cause to refine the watch to a Severe Thunderstorm Warning for Edmonton City and the counties to the south and west.

Within minutes a citizen near Leduc reported seeing an apparent rope-like tornado touch down for 10 seconds and disappear (Figures 3 and 4, and back



Tornado damage path, F-scale intensities and times of occurrence at several locations.

cover, upper left). Considering the forecast severe instability and proximity to a major population area, this prompted an immediate Weatheradio Alert for the tornado warning that was composed for hard-copy transmission at 3:07 p.m. That no sooner was done than off-duty briefer, Pat Kyle, reported a tornado on the extreme southeast edge of the city. While this was relayed by Weatheradio the first tornado warning update was issued about 3:30 p.m. (Figure 5).

By this time severe-weather assistant Pat McCarthy and others were rushing back and forth to the roof of our office building, relaying visual reports of the tornado's size and direction. Like most other citizens we were mesmerized by this phenomenon and only reluctantly took cover in the basement after all power failed and the tornado passed about 2 km east of our location (Figure 6 and back cover, centre right and lower left; also satellite images on Figures 7 and 8). Before doing so, we had been able to reach the Prairie Weather Centre in Winnipeg by phone to hand over forecast responsibility to them.

We were back again within a half hour and, with emergency power, resumed forecast responsibility and issued further updates, maintaining tornado warning status until 7:00 p.m. while an equally severe thunderstorm complex approached and passed over the central and northern parts of the city. Wind gusts over 110 km/h, rain and more large hail added to the damage in and near the city.

By 8 p.m. all danger was over and warnings and watches were running down. The cold front had indeed swept through, with a vengeance! By morning a cold intermittent rain settled in on the survivors and disaster response teams working their way through the wreckage.



Figure 5 Large-size funnel as observed from Millwoods (photo: Steve Watson).



Figure 6 Destructive funnel plowing through the Industrial Area as observed from the roof of the Twin Atria Building, containing the Alberta Weather Centre (photo: Rob den Hartigh).

STORM EFFECTS

Destruction in the narrow swath swept by the tornado over the eastern edge of Edmonton was literally incredible for a city that had never experienced significant tornado damage before. During its one-hour life span it skipped along a path 37 km long varying in width from 100 to 1000 m (Map; Table 1). Heavy trucks and empty rail cars were reported completely airborne. Mobile homes, houses, and industrial sheds and plants were totally destroyed. Hailstones the size of misshapen softballs penetrated some roofs like cannonballs.

After the survey, this storm was assigned level 4 on the 5-point Fujita scale (Table 2), a value rarely exceeded in *Tornado Alley* of the US Midwest. In

Table 1 Tornado chronology, based on eyewitness accounts. Times are the best estimates available (Compiled by Al Wallace).

Time (MDT)	Movement/Location
1455	First known touchdown in the vicinity of Leduc.
1501	Beginning of the 37-km track, 3–4 km southeast of Beaumont.
1507	1–2 km northeast of Beaumont.
1515	Crossing Ellerslie Road between 34 and 17 streets.
1520	Moving through southeastern Millwoods.
1530	Northeast of Millwoods.
1535	Moving through Sherwood Park Industrial Area.
1540	Moving into the river valley near the Strathcona Science Park.
1550	Moving through eastern Clareview.
1553	Hitting farms just southwest of Trailer Park.
1555	Moving into Evergreen Trailer Park.
1600	Dissipates northeast of Trailer Park.

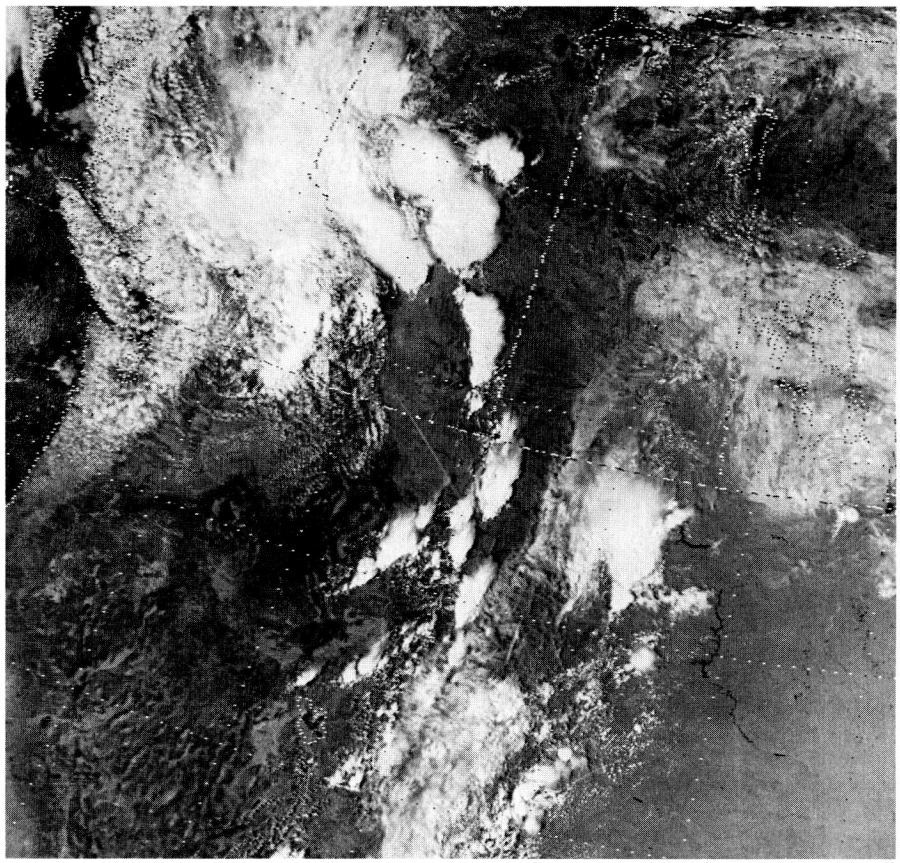


Figure 7 The near-infrared image taken by the US NOAA-9 satellite at 2149 GMT (1549 MDT or 3:49 p.m.) on July 31, 1987. The image very clearly shows the severe thunderstorm complex over central Alberta extending south into southeastern Alberta and into Montana and Wyoming. The shadows cast by the towering storms can be readily noticed on the eastern edges of the storms (Courtesy: AES Computing and Telecommunications Services Branch).

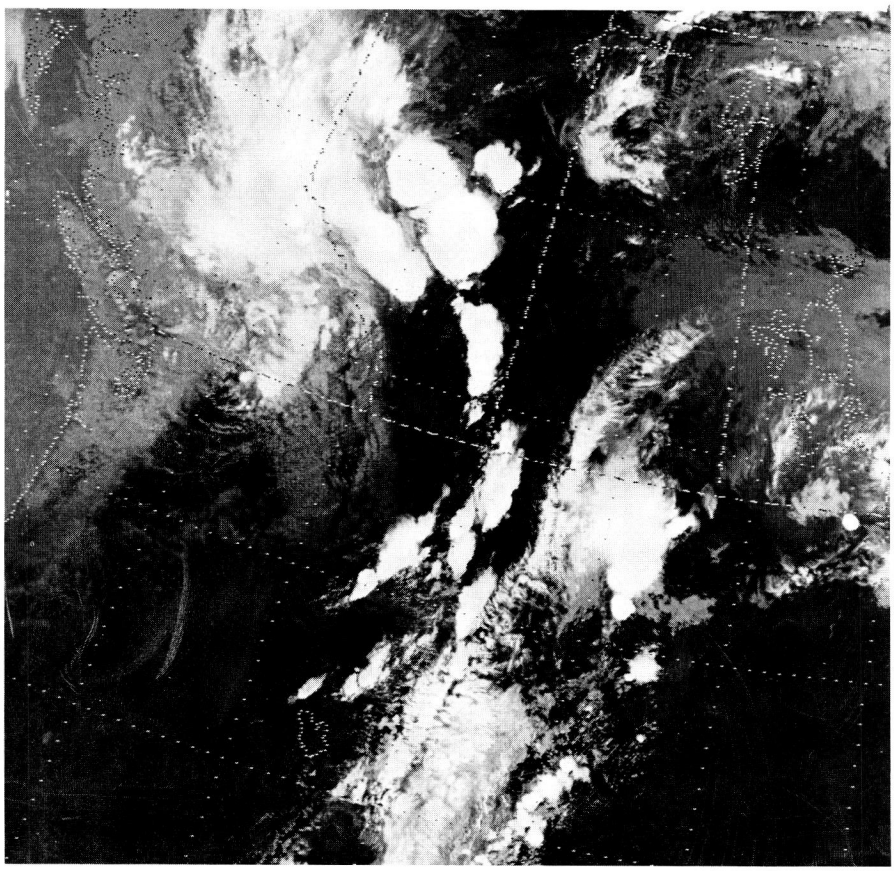


Figure 8 The 11-μm image taken by the US NOAA-9 satellite at 2149 GMT (1549 MDT) on July 31, 1987. The image shows the severe, tornado-producing thunderstorms at the same time as the near-infrared image of Figure 7. The amount of 11-μm radiation sensed by the satellite is proportional to the temperature of the emitting surface; the coldest surfaces are mapped as white while the warmest are mapped as black. The image very clearly shows the warm (low to mid-thirties degrees Celsius) Alberta landscape (black) and the very cold (-50 to -60°C) tops of the severe thunderstorms. Both satellite images show excellent examples of the various stages of thunderstorm development: a new development over North Dakota, and well developed complexes over Alberta and eastern Montana (Courtesy: AES Computing and Telecommunications Services Branch).

BACK COVER

The two articles dealing with the July 31 tornado disaster in Edmonton (pages 8–14) are supported by some striking pictures. Some of these are reproduced in colour on the back cover.

Upper Left The initial touchdown near Beaumont (photo: Tom Taylor; see write-up on page 14).

Upper Right Destruction in the Industrial Area at Nault Lumber (photo: Myron Oleskiw).

Centre Left The remains of the Evergreen Trailer Park (photo: Pat McCarthy).

Centre Right The funnel cloud moving through the Industrial Area and viewed from the roof of the Twin Atria Building, containing the AES Alberta Weather Centre (photo: Rob den Hartigh).

Lower Left The full force of the tornado is felt in the Industrial Area (photo: Rob den Hartigh).

Lower Right What remains of a house in the Ellerslie Road area, south of Millwoods (photo: Myron Oleskiw).

COUVERTURE ARRIÈRE

Ces photos saisissantes appuient les deux articles qui discutent du désastre causé par la tornade d'Edmonton du 31 juillet.

En haut, à gauche. Première observation de la tornade touchant le sol, près de Beaumont. (Photo: Tom Taylor, voir le texte à la page 14)

En haut, à droite. Destruction de Nault Lumber dans la zone industrielle. (Photo: Myron Oleskiw)

Centre gauche. Ce qui reste à l'emplacement de l'Evergreen Trailer Park. (Photo: Pat McCarthy)

Centre droit. L'entonnoir nuageux se déplaçant dans la zone industrielle, vue de l'édifice Twin Atria, demeure de Centre météorologique de l'Alberta / SEA. (Photo: Rob den Hartigh)

En bas, à gauche. La tornade fait sentir toute sa force dans la zone industrielle. (Photo: Rob den Hartigh)

En bas, à droite. Ce qui reste d'une maison dans le secteur Ellerslie Road, au sud de Millwoods. (Photo: Myron Oleskiw)

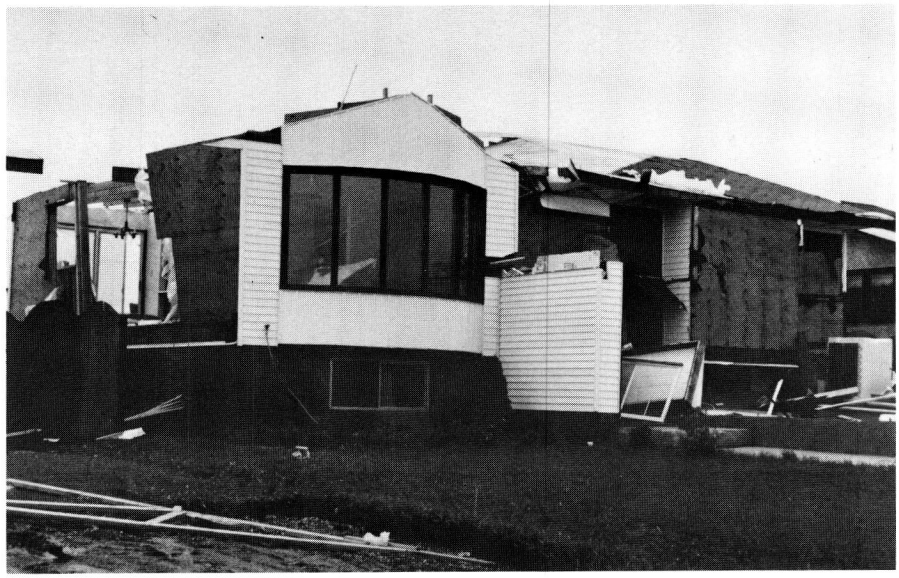


Figure 9 Tornado-ravaged houses in Millwoods (photo: Myron Oleskiw).

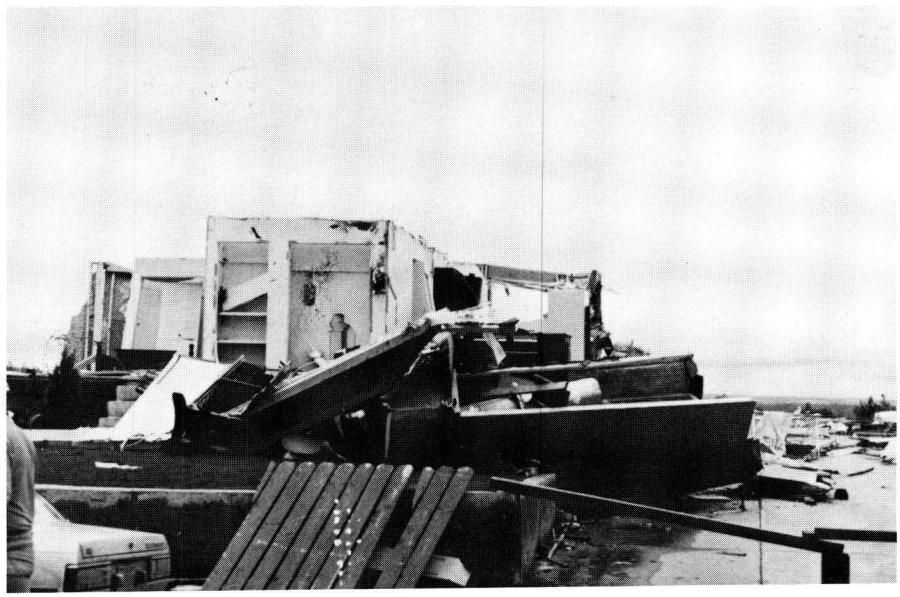


Figure 10 View of destruction in the Clareview area (photo: Lub Wotjiw).

Table 2 The Fujita Tornado Intensity Scale.

Scale Value	Surface Wind Speed (km/h)	Expected Damage
F0	64–116	Light
F1	117–180	Moderate
F2	181–252	Considerable
F3	253–330	Severe
F4	331–417	Devastating
F5	418–509	Incredible

the past 97 years there have been only seven other documented tornado incidents in Edmonton and these had caused negligible damage.

Twenty-seven deaths were recorded with permanent injury to at least one survivor. Damage was estimated at 250 million dollars including outright destruction and property damage, men and material costs for rescue and repair, and social assistance costs for individuals and business victims. The other severe thunderstorms that day contributed more hail, wind, and rain-related losses to the total bill.

Basically the regular forecasts and watch-warning program worked well. The few radio stations with Weatheradio reacted fastest, but mid-afternoon of the Friday preceding a long weekend is a poor time to reach listeners.

The heaviest workload came after the

Continued on page 14

THE PATH OF DESTRUCTION

by Al Wallace

Information on the physical aspects of the tornado is based on a synthesis of eyewitness reports, ground surveys and an aerial survey by Brian Smith of the University of Chicago. Adjustments may be made to the conclusions regarding timing and damage path after more information has been received.

TORNADO PATH

A tornado was sighted near Leduc at 2:55 p.m. on July 31 by a member of the public when a funnel cloud was seen to touch down and then retract (Figures 3 and 4; back cover, upper left). According to eyewitness accounts, the tornado re-formed southeast of Beaumont at 3:01 p.m. It then followed a generally northward track moving to the east of Beaumont, across the eastern fringes of Millwoods, northward to the Sherwood Park Industrial Estates (Figure 6; back cover, centre right and lower left), then to the North Saskatchewan River Valley. It followed the river northward, exiting the valley where it curves eastwards. The tornado crossed the northeastern fringes of Clareview. While crossing 153 Avenue it moved northeast to the Evergreen Trailer Park, then continued northeastward for a few hundred metres and dissipated.

The tornado was on the ground for over an hour, from its touchdown at 3:01 p.m., to its dissipation northeast of the trailer park just after 4:00 p.m. (Table 1). Based on the damage surveys, there was only one tornadic event with a path length of about 37 km and an average speed near 35 km/h. The damage path varied in width from less than 100 m to over 1000 m. In the most severely damaged areas, the width of the severe destruction varied from 200 m (Evergreen Trailer Park) to about 700 m (industrial sections).

TORNADO INTENSITY

Surveys of the damage led to this tornado being classified as an F4 on the Fujita Tornado Intensity Scale (Table 2). Along the path of the tornado (Map) varying scales of damage were visible, ranging from F0 to F4 (occasionally). Occurrences of missile damage were evident in many areas.

Beaumont Area – Ellerslie Road: 1455–1515 MDT

Little damage was visible at the funnel's first contact with the ground. After the tornado had set down again about 3 km southeast of Beaumont, only minor damage was visible. While it moved northward and strengthened, F1–F2 damage was inflicted 2 km south-southeast of Beaumont although the path width was narrow (less than 100 m). About 1.5 km southeast of Beaumont the damage was more severe (F2–F3) with the destruction of several farm buildings. The tornado appeared to have weakened as it continued northeastward then gained strength as it hit the Hilltop Dairy Farm (about 2.5 km northeast of Beaumont) at about F2–F3. Extensive roof damage to 3 new homes east of 34 Street, 1.3 km south of Ellerslie Road, indicates F2 strength. On traversing Ellerslie Road it appeared to maintain F2 strength.

Millwoods: 1515–1525 MDT *(Figure 9; back cover, lower right)*

When the tornado moved into southeast Millwoods, its damage path was 750–1000 m wide, with the most significant damage about 500 m wide. While the tornado moved north, transmission towers were toppled and trees were damaged (F2). The damage path crossed west of 34 Street at 19 Avenue. Houses along the east side of 35 Street between 20 and 22 avenues were damaged consistent with an F2 tornado. The main damage track then veered east of 34 Street to the north of 23 Avenue and continued northward. The tornado appeared to weaken to F1 as it passed northeastern Millwoods.

Industrial Area: 1525–1540 MDT *(North of Whitemud Freeway to the River Valley, between 34 and 17 streets) (back cover, upper right)*

After the tornado crossed the Whitemud Freeway, it gained strength to the F4 level. Damage was extensive and devastating within an area 600–700 m wide, from west of the CPR tracks to about 24 Street. Moderate damage extended about 1000 m wide. Within the more severely damaged zone of 600–700 m, buildings were totally destroyed, cars and trucks were picked up and moved considerable distances or suffered severe damage, steel girders were twisted, and train cars were derailed. On crossing the CNR tracks east of the Imperial Oil Refinery it weakened to F2 when it moved into the river valley near the Strathcona Science Park. (Note the satellite images in Figures 7 and 8 are for 1549 MDT.)

Clareview: 1540–1555 MDT *(Figure 10)*

The tornado then moved parallel to the river valley at F1-F2 strength causing moderate tree damage, and followed the river valley east of Clareview. Roof damage was evident east of 24 Street between 120 and 137 avenues, tree damage and some structural damage was evident in Hermitage Park and a drive-in theatre was destroyed near 24 Street/137 Avenue (F1–F2). The greatest devastation occurred along 19 Street between 145 and 147 avenues where 3 houses (2-storey) were completely demolished and many others had considerable damage. At this point the tornado was F3 approaching F4. Just to the east of the destroyed houses, 4 large steel hydro towers were twisted and knocked down. To the west (21 Street) F1 roof damage was evident. The general damage width was again up to 1 km wide, while severe damage was limited to about 300 m. The tornado moved northeast from Clareview around 19 Street/ 153 Avenue and weakened rapidly. Only minor tree damage (F0) was apparent.

Evergreen Trailer Park: 1555–1605 MDT *(back cover, centre left)*

About 500 m southwest of the Evergreen Trailer Park the tornado once more strengthened (F2–F3) as it struck 3 farms, destroying a mobile home and causing extensive severe damage to buildings, vehicles and trees. The tornado then devastated the trailer park destroying 133 mobile homes and considerably damaging another 39. Frequent missile damage was observed. The path of total destruction was about 200 m wide during this F3 stage. The tornado left the eastern end of the trailer park about 300 m north of the 1 Street/167 Avenue intersection. The tornado quickly dissipated a few hundred metres beyond the trailer park.

Al Wallace joined the Atmospheric Environment Service as an operational meteorologist in 1974. Since that date he has worked as a forecaster in Ontario and an instructor with the meteorologist training course, and has been engaged in applied forecasting research. He is currently the Summer Severe Weather Supervisor at the Alberta Weather Centre in Edmonton, Alberta.

Forecaster Tells Tornado Story

Continued from page 12

event. Supervisors right on up to the regional director spent the weekend and much of the next ten days answering a flood of media enquiries. With no previous experience some local commentators did not comprehend the virtual impossibility of predicting the initiation of an individual tornado. We were pleasantly surprised, though, by many positive comments that began to get publicized from meteorologists in Canada and the United States. This attention also provided the best demonstration that Weatheradio is by far the best way of disseminating tornado warnings and updates for the major urban centres that it serves. Those commercial radio stations who monitor Weatheradio were clearly in the forefront with the warnings and updates. Sales to the other broadcast media and local emergency reponse centres should escalate.

FURTHER READING

Borsu, J., 1987: Edmonton Tornado: The Federal Government's Response. *Emergency Preparedness Digest*, Emergency Preparedness Canada, Ottawa, Ont., pp. 2–11.

Environment Canada, 1987: The Review of the Weather Warning System Associated with the Edmonton Tornado of July 31, 1987. Atmospheric Environment Service, Edmonton, Alta.

Garry Atchison is a senior meteorologist who has been with the Canadian Weather Service for 23 years and has served at the Alberta Weather Centre since 1980. Mr. Atchison was the severe weather forecaster at the Centre on that tragic day.

This article is reprinted from *Zephyr*, October 1987, published by the Atmospheric Environment Service.

RÉSUMÉ *Au cours de l'après-midi du 31 juillet 1987 une tornade dévastatrice frappe la ville d'Edmonton. Cette violente tempête cause la mort de 27 personnes et en blesse des centaines d'autres; en plus, elle provoque des dommages matériels s'élevant à plus de 300 millions de dollars.*

D'une force F-4 selon l'échelle Fujita, la tornade produit des vents s'élevant jusqu'à 417 km/h et entraîne une destruction incroyable dans l'extrême est de la ville. Elle dure près d'une heure et se déplace sur une distance d'environ 37 km; sa trajectoire est large de quelques centaines de mètres à 1300 m; elle apparaît sous plusieurs formes et produit de nombreux tourbillons. En plus de la tornade, la violente tempête produit une large bande de grêle qui endommage maisons et véchicules; le plus gros grêlon mesuré a un diamètre de 10 cm.

Durant la dernière semaine de juillet, le temps est orageux. La masse d'air chaud et humide sur l'Alberta provoque des orages violents presque quotidiennement; on compte un nombre record d'éclairs et, le 30, on détecte 46 000 décharges des nuages au sol. Il est significatif de noter que, pendant cette semaine, 14 tornades surviennent.

Il n'est donc pas surprenant que l'on prévoit encore des orages violents le 31. Tôt en journée, on émet des avis de temps violent. Lorsque le radar montre une ligne d'orages qui se développent très rapidement en se déplaçant vers Edmonton, on émet un avertissement de temps violent pour alerter le public du danger imminent. On reçoit le premier rapport d'une tornade, près de Leduc, vers 15 h 00, ce qui entraîne la diffusion immédiate d'un avertissement de tornade. La tornade continue vers le nord à une vitesse de 35 à 40 km/h, détruisant tout sur son passage jusqu'à sa dissipation, passé l'emplacement de l'Evergreen Trailer Park, aux environs de 16 h 00.

Plus tard, une deuxième ligne d'orages, accompagnée de vents destructeurs de 110 km/h et de nuages en entonnoir, passe au-dessus d'Edmonton à 18 h 00. Le même jour, en plus de la tornade d'Edmonton, on compte 4 autres tornades dans le centre de l'Alberta. Celles-ci, ainsi que celles survenues plus tôt dans le mois, sont relativement faibles et frappent des régions rurales peu peuplées.

La période estivale albertaine est souvent marquée par la présence d'orages violents. Quoique moins fréquentes, on a quand même observé une moyenne annuelle de 18 tornades au cours des cinq dernières années.

TOM TAYLOR, TORNADO HERO

One of the heroes of the Edmonton tornado was Tom Taylor, a pharmacist from Leduc, Alberta, about 24 km southeast of the afflicted city. Mr. Taylor had just come in from feeding his black retrievers in the kennel outside when he saw thick, black rain clouds over his house. For fifteen seconds from the loft of his house, which stands on an archeological site high on a hill, he saw a low-hanging cloud to the southwest with a "snake-like" funnel pointing towards the ground. At the same time high winds were kicking up debris. Taylor, trained to be observant in his job (he sometimes files narcotics reports for the police), picked up the phone and called the Alberta Weather Centre informing them "things are pretty hectic right now". He told them that the cloud's funnel had just hit the ground. The time was approximately 2:55 p.m. The Weather Centre, which had been expecting severe weather, immediately put out a tornado warning. Half an hour later, the full fury of the tornado pounded one of Edmonton's principal industrial districts.

Tom spent most of his time in the loft. He didn't have time to head for the basement. But if he had to do it all over again he would have used the below-ground extension phone. His wife and children were in Edmonton. They felt the full force of the tornado. Little did they know that Mr. Taylor had been the very first person to spot the tornado and report it promptly to the Weather Centre.

Naturally AES staff were delighted with Mr. Taylor's prompt action. Says AES Western Region director Brian O'Donnell "It was on the basis of Mr. Taylor's report that the tornado warning was issued for Edmonton. His quick action resulted in more warning time for the citizens of the city." Mr. Taylor has now agreed to become a volunteer under the AES Severe Weather Watch program.

Taylor says he has been interested in weather since he was a child. He has a close friend who works with the Alberta Hail Program. He listens to weather forecasts at least three times a day and has a Weatheradio Canada receiver. "I'm a country person. Call me a farmer with a weather eye if you wish".

On November 26, 1987 the federal Minister of the Environment, The Honorable Tom McMillan, presented Mr. Taylor with a framed letter of appreciation for his superb initiative. One of Mr. Taylor's photographs was awarded a prize in the AES *Canadian Weather Trivia Calendar* contest.

This article is reprinted from *Zephyr*, October 1987, published by the Atmospheric Environment Service.

UNDERSTANDING CO_2 AND CLIMATE

Until recently, the debate about how humans are changing the structure and composition of the earth's atmosphere has been a scientific one. Now, year by year, as our understanding of the related implications for society and its future welfare slowly improves, the issue is becoming a major concern of policy makers. Recent research activities, both internationally and nationally, have contributed substantially to this awakening.

THE EARTH'S ATMOSPHERE: Are We Changing Its Composition?

Evidence of the effects of human society and its activities on the earth's atmosphere continues to accumulate; for example:

- Atmospheric concentrations of the most abundant greenhouse gas, carbon dioxide (CO_2), are increasing by 0.4% a year. CO_2 emissions from the burning of fossil fuels for energy, the primary source for its increased atmospheric concentrations, appear likely to escalate at an average annual rate of about 1% until at least A.D. 2050. The energy policies of the international community will be a major factor in determining the magnitude, and even the direction, of such trends, particularly beyond A.D. 2050.
- Atmospheric methane, a secondary but very effective greenhouse gas, is increasing annually at about 1% and has almost doubled in concentration during the past several centuries. Increasing trends in the global population of domestic animals and increases in the land area covered with rice paddies, both important sources of methane, suggest the atmospheric concentrations of this gas will continue to rise unabated.
- Other trace gases, lower in concentration but of significant importance to global climates, are increasing at annual rates of up to 6%. These include nitrous oxide, surface ozone and chlorofluorocarbons (freons).
- Winter concentrations of aerosols in the lower levels of the Arctic atmosphere are increasing, affecting the heat energy balance of the Arctic climate. The long-range transport of air pollutants from Europe appears to be the primary cause.

CLIMATIC RESPONSE: How Will Changing Atmospheric Composition Affect Climate?

Changes in the atmospheric composition, as described above, are expected to cause major alterations to the earth's climate. Recent studies suggest that

- A doubling of atmospheric CO_2 concentrations, or its equivalent, may increase average surface temperatures of the earth by 3.5 to 4.2°C, well into the upper range of earlier projections. Such a warming would be larger than any climate change experienced on earth during the past 10,000 years (Figure 1).
- An increase of 1°C over the temperatures during the nineteenth century could occur by A.D. 2000. Global climate records suggest that a warming of 0.3–0.7°C has already happened, with the three warmest years on record occurring during the 1980s.

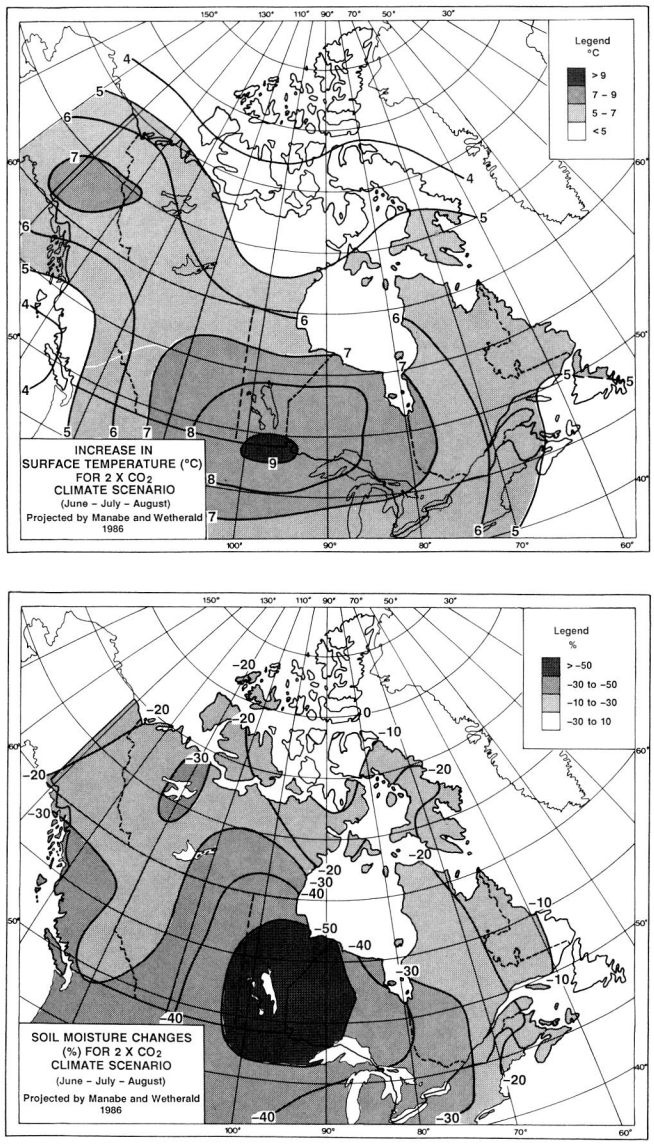


Figure 1 Scenarios for a 2 × CO_2-type climate over Canada as projected by the Geophysical Fluid Dynamics Laboratory, Princeton, N.J., in 1986.

- Warmer climates are likely to reduce mid-continental cloudiness over North America in summer, thus amplifying summer warming and dryness. Within the next half century, central Canada could experience a midsummer warming of as much as 9°C, with a corresponding 50% reduction in soil moisture.
- Past climates indicate that the primary consequence of a major global warming is likely to be a large-scale redistribution of global freshwater resources.

IMPLICATIONS OF AN ENHANCED GREENHOUSE EFFECT: How Will We Be Affected?

The effects on society of higher CO_2 concentrations, warmer global climates, and related changes are complex and difficult to assess. Some humans will benefit, others will suffer. Ongoing studies into how natural ecosystems and hence how humans are likely to react to global change are gradually adding to the knowledge base required by policy-makers for appropriate response. Recent results include the following:

- The growth and drought resistance of plants improve as the atmospheric CO_2 concentration increases. Although the response of vegetation in natural, competitive environments is not well understood, experiments in growth chambers under controlled environments suggest that these improvements could be substantial.
- Under warmer climates, Prairie agriculture would on average experience modest decreases in productivity, but could encounter serious problems during more frequent years of severe drought.
- In Ontario, the adverse economic effects resulting from increased aridity in southern regions, lower lake levels, increased severity of fires, diseases and pests and the likely collapse of the winter skiing industry would be partially offset by the benefits of long growing seasons, year-round shipping in ice-free waters, reduced space-heating costs and improved summer tourism potential. The net annual economic loss to Ontario due to a doubled CO_2-type climate could exceed $100 million.
- Rising sea levels due to climate warming would pose a significant threat to coastal Canadian cities. If such rises were to exceed 1 metre, storm surges with 20-year return periods would inundate the new Convention Centre, a number of major commerical complexes, and several hundred homes in Charlottetown, P.E.I. Similar rises would affect major sewage treatment facilities, transportation corridors and a power plant in Saint John, N.B.

POLICY IMPLICATIONS: How Should We Respond?

The effects of human activities on the planet's atmospheric life-support system and the implications of related changes for humans are emerging as major international policy issues. Yet the understanding of the problem is still very limited and subject to controversy, and hence becomes a major obstacle to timely and responsible policy action. Studies into this dilemma suggest the following:

- Aggressive international research efforts to advance the level of understanding must continue, and merit the active support of national and international governments.
- Decision-makers dealing with social and economic activities sensitive to climate, particularly those extending several decades or more in the future, need to include the prospect of climate change in their considerations now.
- Decision-makers must begin to recognize the unescapable relationship between economic development and the environment in their policy formulations. Energy policies in particular must promote strategies consistent with the concept of a sustainable environment.
- Canadians, among the highest per capita emitters of CO_2 in the world, have a great potential for improving the efficiency of their use of energy.
- Public awareness and the development of a new environmental ethic are important factors in achieving effective policy changes.

This report is adapted from Environment Canada's Annual Report 1986: Understanding CO_2 and Climate (August 1987), a periodic report summarizing current events in CO_2 climate research. The material was prepared and made available by Henry Hengeveld, the Atmospheric Environment Service advisor on carbon dioxide related matters.

Comprendre le CO_2 et le climat

La projection des émissions futures de CO_2 dans l'atmosphère semble indiquer au minimum le doublement ultérieur de la concentration de CO_2 dans l'atmosphère par rapport aux niveaux pré-industriels. Toutefois, l'époque où surviendra un tel doublement est difficile à établir, car le comportement humain à long terme en matière de consommation d'énergie est en grande partie imprévisible. En outre, il est probable que la concentraion des autres gaz de serre s'accroît de beaucoup au cours des futures décennies, d'ou un renforcement des effets climatiques de la hausse des niveaux de CO_2. Un effet combiné sur le climat qui équivaudra au doublement de CO_2 se manifestera sans doute dès l'an 2030 et, fait très probable, d'ici à l'an 2050.

Les scientifiques de l'atmosphère avancent maintenant que les changements susmentionnés entraîneront sans doute un réchauffement climatique mondial supérieur à tout changement jamais observé par l'humanité. Il est probable qu'un tel réchauffement s'accompagnera des phénomènes suivants : réchauffement amplifié aux régions de haute latitude en automne et en hiver; étés plus secs aux latitudes moyennes de l'hémisphère nord; augmentation de l'humidité disponible dans les régions polaires; hausse éventuelle de 0,2 à 1,4 m du niveau moyen de la mer à l'échelle mondiale.

Des études préliminaires des implications d'un réchauffement climatique important appuient cette conclusion : existence de profondes répercussions sur les écosystèmes, l'agriculture, les ressources en eau et la glace de mer du globe. Les pays appauvris du monde en voie de développement sont moins aptes à répondre à un tel changement et, de ce fait, plus vulnérables aux conséquences catastrophiques éventuelles. De grands secteurs de la population du monde seront aussi touchés par une hausse de 1 m du niveau de la mer. Au sein du Canada, l'agriculture bénéficiera beaucoup de saisons de croissance plus chaudes et plus longues, en particulier dans les régions du nord : les effets directs d'une quantité accrue de CO_2 pourraient accroître de 15 p. 100 la croissance des cultures de plein champ; l'agriculture des régions du sud pourrait être très touchée par une augmentation de la fréquence et de la gravité de la sécheresse; les saisons des glaces des Grands Lacs disparaîtront peut-être; la baisse du ruissellement des eaux du bassin des Grands Lacs pourrait réduire de 20 cm le niveau des lacs; de grands marécages d'intérêt écologique, comme celui de Point Pelee, disparaîtraient ou seraient profondément modifiés; on pourrait assister à la fin des saisons de neige fiables dans le sud de l'Ontario.

SUMMER OF '87 IN REVIEW

by Amir Shabbar

The season was anything but placid and one to be long remembered across Canada.

The summer of 1987 (June-July-August) set some long-term records. The heat wave that covered southern Ontario and Quebec brought back memories of the heat waves in the 1940s and 1950s. Canada's worst natural disaster surprised Edmontonians when a violent tornado slashed a vicious trail of death and destruction through their city on July 31. Scanty rainfall resulted in record-low river levels and dry wells in the Maritimes, where water rationing was imposed in some communities. July rains averted an onset of drought on the Prairies; further it was excessively dry on the West Coast.

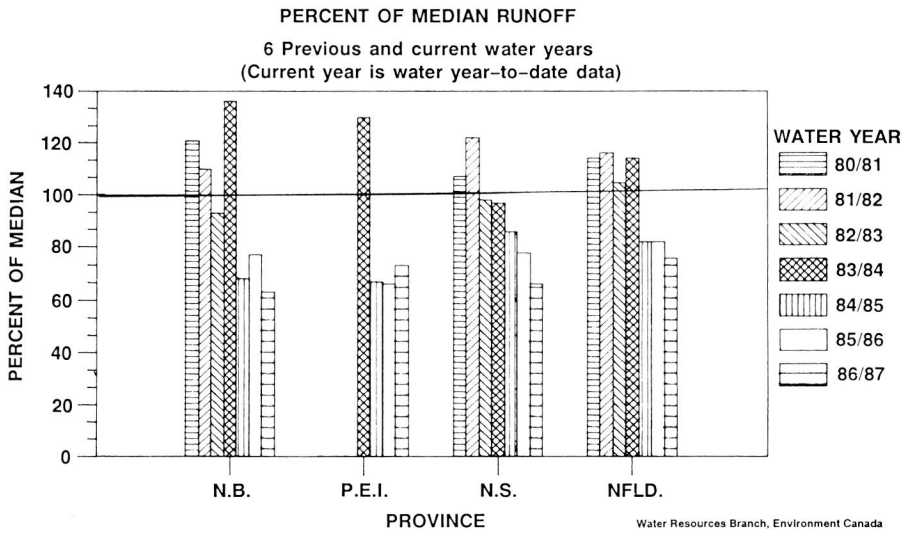
TEMPERATURE

A vast stretch of the country from the British Columbia Coast to the St. Lawrence Valley and the High Arctic enjoyed temperatures about a degree above normal. Southern Alberta and southern Saskatchewan experienced a slightly below normal summer. Most of the Maritimes and the Territories had readings from near normal to 1°C below normal. Southern Ontario sweltered through two heat waves during June and July, when maximum temperatures climbed above 30°C and the humidex registered an uncomfortable 40°C on 14 days.

The highest and lowest temperatures occurred in June: 39.1°C at Lytton, B.C.; −14.2°C at Cambridge Bay, N.W.T.

PRECIPITATION

Areas from eastern Ontario to the East Coast experienced a drier summer than usual. Summer precipitation was less than 75% of normal in the Atlantic Provinces, in some southern Newfoundland communities amounting to less than half of normal. Charlo, Moncton and Fredericton received record-low July precipitation, from 20 to 40 mm. At Sydney, it was the driest July since 1937. The West Coast, the northern interior valleys of British Columbia and the Mackenzie Valley were also dry. Communities in these areas had from one half to two thirds of their normal summer rainfalls.



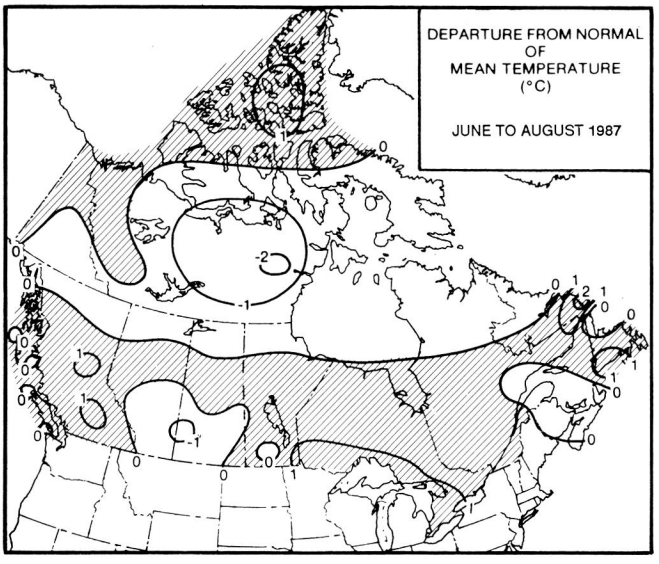
Most of the Prairies, Ontario and the Territories had ample rainfall. Precipitation was from 100 to 150% of normal. Deluges (200 to 300 mm) inundated the Grande Prairie and Edson Forest Districts during the last two days of July. During mid-August, southwestern Manitoba received a "once-in-a-lifetime" rainfall when 120 to 140 mm fell in a 24-hour period.

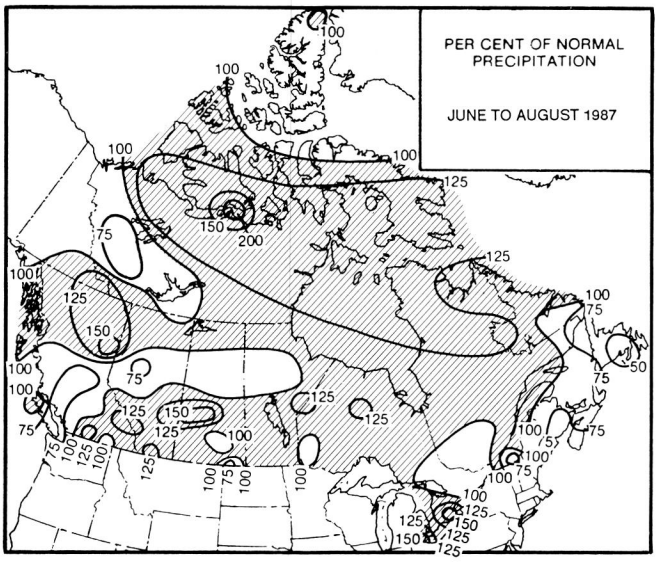
SIGNIFICANT CLIMATIC IMPACTS

The unusually dry summer created problems in the Atlantic Provinces when wells dried up and lake and river water dropped to record, low levels. Travel in the woods was banned in western Nova Scotia, and owing to the heightened fears of forest fires a permit was required to camp and picnic. Sheep farmers found their herds vulnerable to coyote attacks while sheep roamed farther afield in search of watering holes and grass. In Newfoundland, 1,500 workers were laid off in the forestry industry after the forest fire hazard index rose to extreme levels.

Throughout most of July, central Canada baked during a record-breaking heat wave, when daytime temperatures soared above 30°C. Ontario had its hottest July in 33 years while a tropical brand of air mass covered the Province. Maximum temperatures exceeded 30°C on 14 occasions in Toronto – its greatest number of "hot days" in 67 years. Moreover, the extensive use of air conditioners set a record for daily electrical consumption in the city. Toronto experienced its sixth warmest summer since the start of records in 1840. The heat was beneficial for most Ontario crops, particularly corn and soybeans. After a dismal summer in 1986, farmers were reaping a bumper crop by the end of summer.

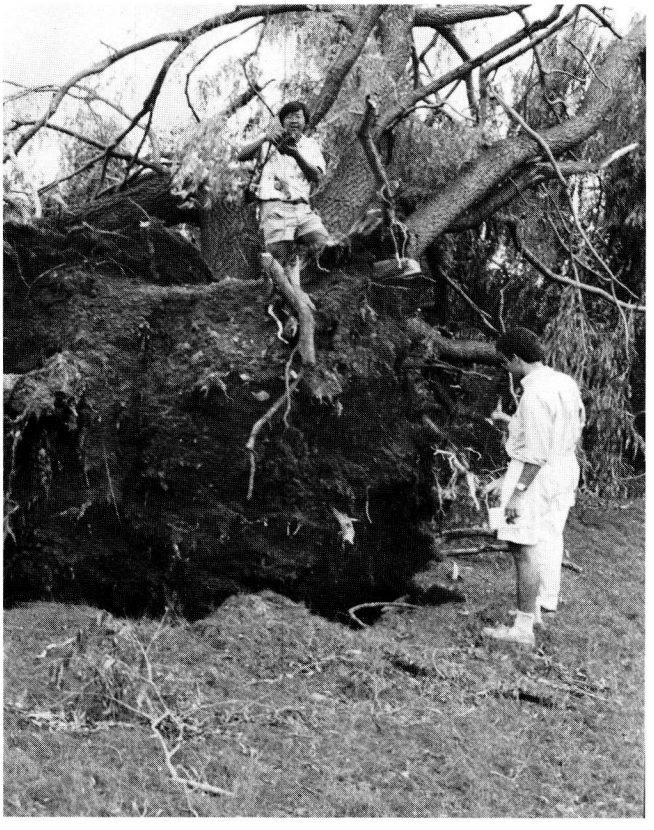
On several occasions, a clash between the hot and humid air from the south and the cooler and drier air from the north resulted in outbreaks of violent summer thunderstorms and tornadoes in southern Ontario and southern Quebec. On July 14, a series of intense thunderstorm cells dropped over 100 mm of rain in a 2-hour period on Montréal. Main expressways and basements were flooded throughout the city. Some roads were submerged under 4 metres of water and motorists had to be rescued from their vehicles. Damage estimates from the flooding exceeded $200 million. On July 24, a wave of destructive thunderstorms lashed southern Ontario, where lightning hit a YMCA camp near Bala (north of Orillia) and 15 campers were sent to hospital. Tornadoes at Sebright and in Missis-







A fireman lends a helping hand to motorist Pierre Corbeil on Décarie Expressway. *Gazette,* Pierre Obendrauf.



Aftermath of the Mississauga tornado outbreak on July 24, 1987.

sauga caused extensive structural damage to buildings the same day.

The warm and dry weather helped to lower the record-high water levels in the Great Lakes. The declining lake levels significantly reduced the risk of fall flooding along the shorelines.

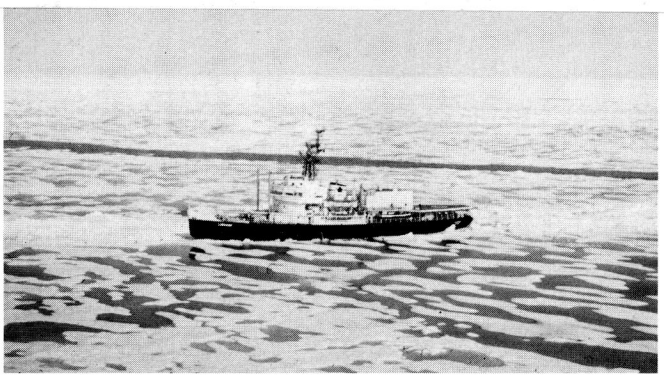
After a very dry spring on the Prairies, July rains provided much needed moisture for crop growth. The rains averted what had been shaping up as yet another catastrophic growing season for the Prairie farmers. Hailstorms, damaging winds and sudden downpours are common in summer on the Prairies. This year was no exception. On July 6, two tornadoes touched down in the southern part of Winnipeg. The winds caused considerable damage, and over 40 mm of rain in $2\frac{1}{2}$ hours caused flash floods. Heavy rains in the 200 to 300 mm range inundated the Grande Prairie and Edson Forest Districts during the last two days of July. Rain-swollen rivers washed out roads and bridges, and huge tracts of farmland were waterlogged. The most destructive summer weather was a killer tornado that struck Edmonton on July 31, the second worst tornado disaster in

Environment CANADA Environnement
00562708 VOL.10 NO.1 1988
S
CHINOOK

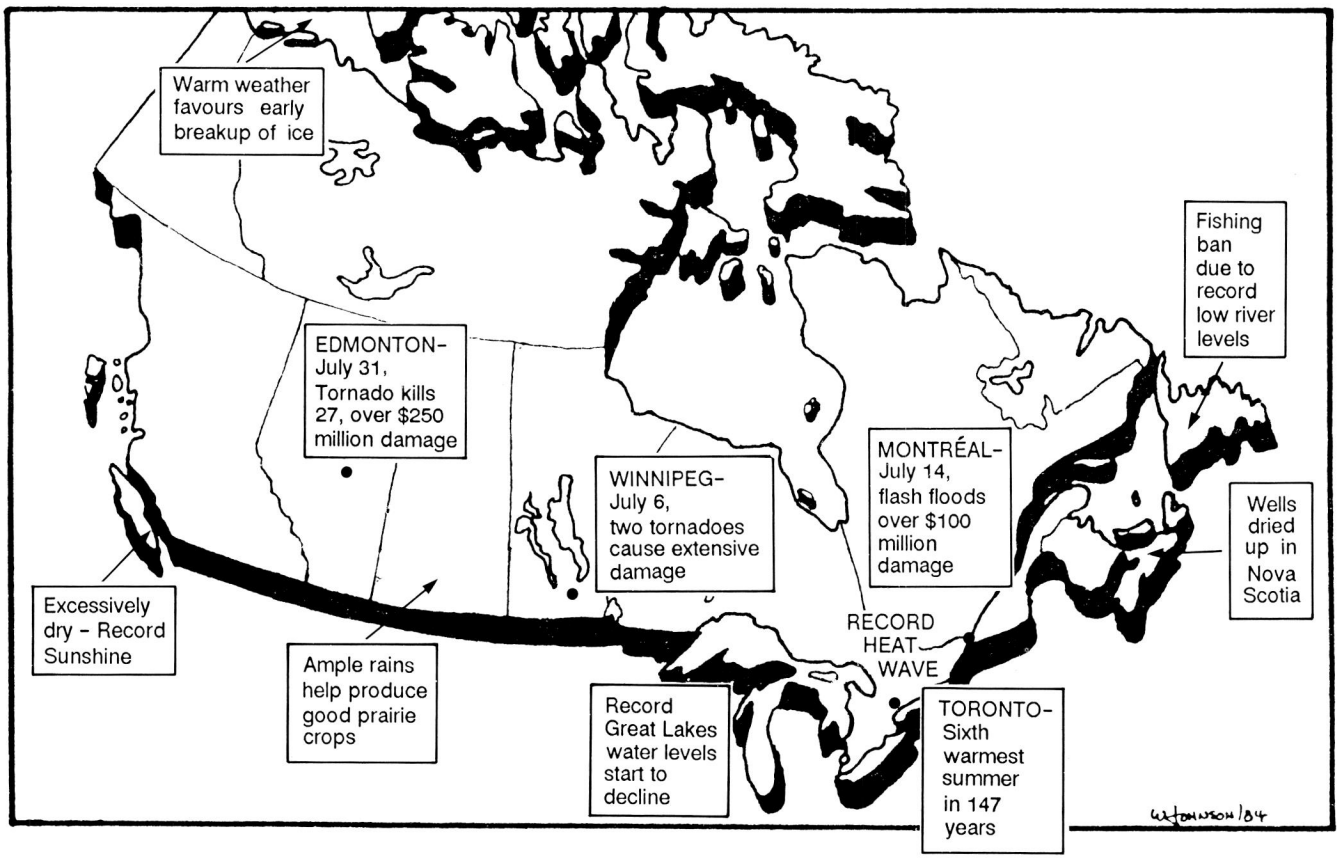
OTM



Many cars were stalled by floods, but this one was smacked by a tree on Décarie Blvd. *Gazette,* James Seeley.



Canadian Coastguard icebreaker *Labrador* navigating in Arctic waters.



Canada (the Regina cyclone in 1912 had claimed 28 lives). It slashed a vicious trail of death and destruction in the agricultural, industrial and residential areas of Strathcona County and in Edmonton's eastern subdivisions. The Evergreen Mobile Home Park in north-eastern Edmonton felt the brunt of the storm when the tornado ripped through the park turning it into a field of chipwood and mangled metal. In all, 27 people lost their lives, over 200 were injured and property damage exceeded $250 million.

Sunshine abounded on the West Coast, where Victoria received a record 348 hours of bright sunshine during August. Although many West Coast residents enjoyed the long stretches of sunny and dry weather, residents on Galiano and Gabriola Islands, located between Vancouver Island and the mainland, saw their wells dry up, even forcing them to ration their bath water.

The warm weather and favourable winds sped up the ice breakup and allowed crews to drill for oil in the Beaufort Sea.

Amir Shabbar is a research meteorologist in the Canadian Climate Centre with a special interest in climate prediction.











