

Canada Weekly

Ottawa
Canada

Volume 10, No. 16
April 21, 1982

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Canadarm claims accolades for another success in space

Space shuttle *Columbia*, with the Canadarm, the remote manipulator system built in Toronto, returned to earth last month after a highly successful week of testing the arm's capabilities in space.

The 15-metre, \$100-million arm was designed in Canada by the National Research Council (NRC) and built by Spar Aerospace Limited of Toronto. The arm was given to the United States National Aeronautics and Space Administration (NASA); the March test was the arm's second success in space.

Commander Jack Lousma and Colonel George Fullerton aboard the *Columbia* and engineers at mission control were pleased and impressed with the Canadarm.

"My compliments to the Canadians," said Fullerton who operated the arm during the mission. "Everything it has done is just like the simulator or better, very smooth, absolutely no surprises. It really looks like a fine piece of machinery," he added.

On earth the gangly Canadarm, with its shoulder, elbow and wrist joints and all its equipment, cannot even support its own weight. In space it must operate

smoothly and efficiently lifting and moving large packages. Eventually the arm will be used to lift satellites weighing up to 30 000 kilograms.

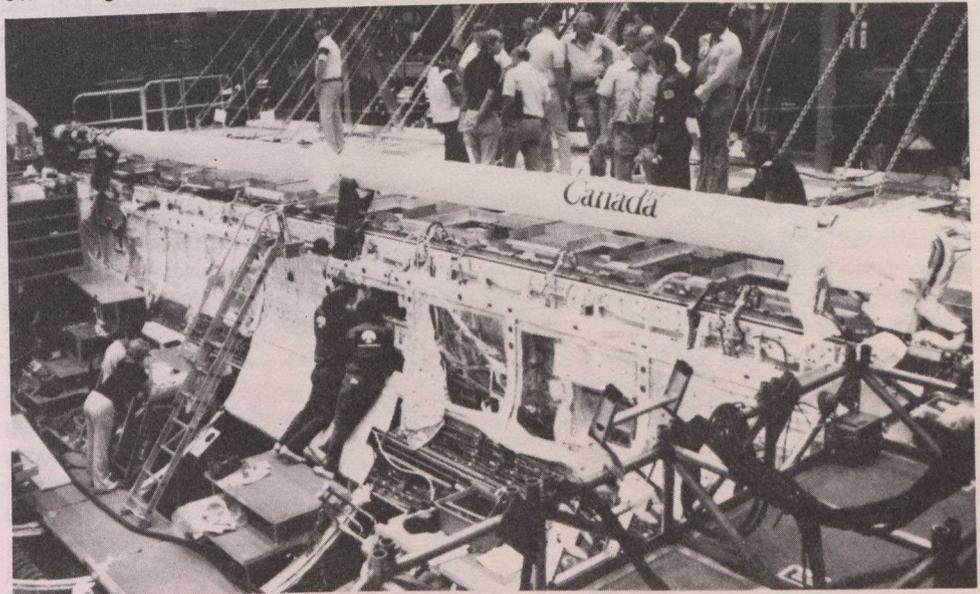
Canadians attend launch

Governor General Edward Schreyer, Canadian Consul General in New York Ken Taylor, golfer George Knudson, and entertainers Anne Murray and André Gagnon were among a number of prominent Canadians invited to attend the launch of the *Columbia* and the Canadarm from the Kennedy Space Center at Cape Canaveral, Florida, on March 22.

Mr. Taylor, Canada's former ambassador to Iran, said of the launch, "It's an important occasion for us." Canadians have always been interested in the U.S. space program, he said, but the feeling is even more pronounced now because the shuttle is testing the Canadarm.

This mission was the third of four test flights designed to make shuttle space transport a reusable tool for exploring space. Flying in space for eight days, it was the longest earth-orbiting mission to date, almost twice as long as

Queen Elizabeth II was in Ottawa, April 17, where she signed a proclamation bringing into force the Constitution Act, 1982. The act serves to give Canada full authority over its Constitution and legally ends British jurisdiction. The next issue of *Canada Weekly* will carry further details on this important step in Canada's constitutional and political history.



Canadarm, wrapped in its white thermal blanket, is placed on shuttle orbiter *Columbia* prior to shuttle's second mission.

the first two missions combined. Before returning to earth, the space shuttle had completed 129 orbits and had flown 5.3 million kilometres, 230 kilometres above earth. It was necessary to remain in space for an extra day than originally planned, owing to inclement weather at the landing site.

Tests started immediately

Throughout the flight the Canadian-built manipulator arm, which mimics the way the human brain controls arms and fingers, was put through a battery of tests.

The first tests were a series of high level twists, originally planned for the second mission that was curtailed after two days when *Columbia* developed fuel cell trouble. Once these tests were successfully completed, the Canadarm was tested for the cargo-lifting job it was designed to perform.

Operating from a station in the cockpit, Colonel Fullerton tested the device. The arm was first tried out for its manoeuvrability, hinged in the cargo bay, five times.

In the next four tests, the arm lifted a 160-kilogram plasma diagnostic unit designed to look at shock waves that ripple down the orbiter as it is bombarded by the highly-charged particles streaming towards earth on the solar wind. On two occasions the unit was only grabbed, picked up and then secured back in position. On the other two occasions, Fullerton manoeuvred the arm over a package of scientific instruments in the cargo bay, lowered it onto a grappling fixture and locked on with the crane's wire-snare hand. Flexing the spindly arm's metallic muscles he then lifted the



Columbia's remote manipulator system extends outward from the earth in this view made from a TV monitor. The Canadian-built arm grips an instrument package lifted from the cargo bay. At bottom left is the tail assembly of the shuttle. In background is the earth, with slightly curving horizon diagonally across the photo.

payload from its berth, moved it around the cavernous bay and brought it high out of the cargo bay.

The tests were almost cancelled, owing to the malfunction of the wrist camera of the Canadarm which was to have aided Fullerton in guiding the arm's wire-mesh fingers to the plasma diagnostic package. Fullerton was able to complete the task using the camera mounted on the elbow of the arm, a pair of binoculars and a simulator in Houston. The efficiency of the elbow camera was of some surprise even to NRC scientists.

"At first we didn't realize just how much that elbow camera could pan and tilt," said Dr. Edwin Gantz, an NRC research scientist. "It can go almost full

circle and a full-range of experiments were carried out."

Canadian engineers were especially pleased when their predictions, that it would only take the arm six minutes for rebirthing in these tests proved correct, despite the failure of the camera.

The test, in which Canadarm was to lift the 360-kilogram induced environmental contamination monitor, was cancelled owing to the failure of the cargo-bay and wrist cameras which were critical to the replacement and securing of this electronic sniffer.

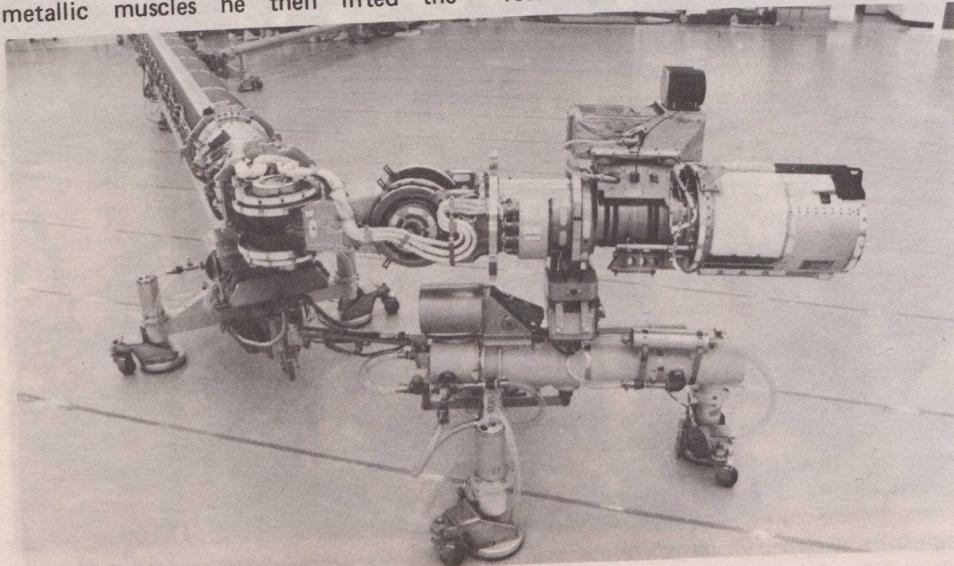
The sniffer was to measure the environmental contaminants released by *Columbia's* jets and protective heat-resistant tiles. Among the more potent compounds the sniffer was to look for was hydrogen peroxide — normal hair bleach — and monomethyl hydrazine, which is highly toxic when it reacts with water.

Canadian scientists, such as a team led by the National Research Council's, Dr. Ian McDiarmid, eventually hope to put the shuttle to work studying the subatomic particles in the earth's outer atmosphere. They need to know the extent of contamination from the orbiter that might interfere with the experiments.

For NASA the information is critical, as the pollutants might cloud optical lenses on satellites that the shuttle will be carrying into space during the next ten years.

During the mission *Columbia* and the Canadarm were put through three tail-to-

(Continued on P. 8)



View of Canadarm, with wrist joint in the forefront, at Spar Limited of Toronto.

Canada-France scientific talks

The France-Canada Joint Commission on Scientific Co-operation held its fourth meeting in Ottawa, March 17-18.

The commission, established in 1973, reviewed the scientific exchanges which have taken place between the two countries since the signing of the Cultural Agreement in 1965. Both sides expressed satisfaction at the ties between their scientific communities especially in the fields of astronomy, agriculture, renewable energy sources and medical research. They also noted agreements and arrangements concluded between research agencies such as the National Research Council of Canada and the French Centre national de la recherche scientifique and the Medical Research Council of Canada and the French Institut national de la santé et de la recherche médicale.

The commission identified 15 areas in which joint projects, exchanges, missions and seminars will be undertaken. The delegations agreed that priority should be given to space (remote sensing), energy (in particular energy conservation), oceanology (robotics for underwater devices), biotechnology and scientific information.

Investment in Canada to increase

Private and public investment in Canada is expected to reach \$87.41 billion in 1982, an increase of 11.4 per cent from the \$78.45 billion estimated for 1980.

In 1981 capital expenditures increased by 18.4 per cent from the 1980 total of \$66.26 billion.

In 1982 spending on construction is expected to reach \$53.38 billion, a 12.1 per cent gain over the \$47.61 billion in 1981, which in turn was 18.4 per cent above the \$40.21 billion in 1980. Residential construction during the current year is projected at \$12.99 billion down 2 per cent from last year's total of \$13.02 billion but 18.3 per cent above the \$11.01 billion in 1980.

A total of 152 700 housing starts are expected in 1982 compared with 178 000 starts in 1981 and 158 600 starts in 1980. Expenditures for non-residential buildings and engineering structures are expected to total \$40.39 billion which is 16.7 per cent above the \$34.59 billion in 1981. The 1981 figure was 18.5 per cent higher than the \$29.20 billion in 1980. Spending on machinery shows a 10.4 per cent in-

crease in 1982 to a total of \$34.03 billion. The 1981 total of \$30.83 billion was 18.4 per cent above the \$26.04 billion in 1980.

Business spending

Expected capital expenditures of the business sector indicate a 1982 total of \$63.21 billion which is 14.1 per cent above the \$55.41 billion in 1981. Last year's gain was 19.5 per cent over the \$46.38 billion in 1980. Investment in institutions and governments combined are up by 11.9 per cent in 1982 compared with an increase of 13 per cent last year.

In the business group, the transportation-communications-utilities group is expected to register the highest increase in value with a rise of \$2.94 billion, which is 18.1 per cent above the 1981 figure. Programs for electric power and pipelines dominate the sector with increases of \$1.17 billion and \$655 million respectively.

In the energy sector, mining, quarrying, petroleum and gas wells will increase 21.2 per cent reflecting in large part the \$1.77 billion (26.6 per cent) increase in the petroleum and gas group. Metal mining is expected to decline by \$101 million or 5.7 per cent from 1981, while the non-metal mining group is shown as increasing by \$343 million or 32.4 per cent.

Manufacturing investments

Manufacturing expenditures in 1982 will reach \$13.89 billion which is 12.1 per cent above the \$12.39 billion spent in 1981. The 1981 figure was 27.1 per cent higher than the 1980 total. Most of the spending is forecast to be strong in the chemicals sector in 1982 with an increase of \$667 million, (34.4 per cent). Paper products will increase by \$408 million (19.2 per cent), while petroleum and coal products will be \$379 million (61.3 per cent) and primary metals will increase to \$236 million (15.8 per cent).

In the remainder of the business sector, the spending in the trade-finance-commercial group is expected to be up by 8.3 per cent over the 1981 figure compared with 14.4 per cent in 1981. In this group, capital spending of the trade group shows a decrease of 4.6 per cent. The 1982 expectations for the agriculture and fishing group are currently shown with an increase of 5.4 per cent, marginally lower than the increase in 1981.

Social capital expenditures represented by institutions and governments, at \$11.21 billion is 11.9 per cent above the \$10 billion in 1981. Most of this increase is for provincial government departments

where the total of \$3.48 billion in 1982 is up by 16.6 per cent over the \$2.98 billion in 1981. Federal and municipal government totals will increase by 12.7 per cent and 8.5 per cent, respectively. The program for hospitals will increase by 23.8 per cent registering the largest change in the institutions group which shows an over-all advance of 10.8 per cent.

Pledges for World Food Program

Canada will contribute \$250 million to the World Food Program for 1983 and 1984.

The two-year pledge, \$125 million for each year, includes \$210 million for commodities and \$40 million in cash.

Canada has also committed \$6.5 million for 1983 and \$7 million for 1984 for commodities and related transportation costs to the International Emergency Food Reserve administered by the World Food Program.

Canada has been associated with the World Food Program since its beginning and these pledges bring Canada's total contribution to over \$1.1 billion.

In announcing the Canadian pledges at the United Nations Food and Agricultural Organization World Food Program pledging conference in New York City, Agriculture Minister Eugene Whelan pointed out that in addition to direct food aid, it is urgent that efforts be made to increase agricultural production, especially in low-income, food-deficit countries.

Self-sufficiency needed

"Greater self-sufficiency in food is imperative both for humanitarian reasons and as a key to world food security and world stability," said Mr. Whelan.

In 1981, 86 per cent of the World Food Program's food aid commitments were made to low-income, food-deficit countries and 80 per cent of the development projects aided by the program were in the area of agriculture and rural development. For the first time since the International Emergency Food Reserve was created in 1975, contributions have surpassed the target of 500 000 tonnes of cereal grains.

"This trend clearly shows that a volunteer reserve can operate successfully in emergencies such as earthquakes, floods and war where there is no short-term alternative to direct food aid," Mr. Whelan said.

Business leaders lauded

Six businessmen have been selected to join the Canadian Business Hall of Fame.

The laureates will be inducted into the Hall of Fame at the fourth annual Canadian Business Leadership Conference (CBLC), held in Toronto.

The laureates are: L.L.G. (Poldi) Bentley, who succeeded in transforming a small veneer mill in British Columbia into one of Canada's largest integrated forest industries, Canadian Forest Products Limited; Edmund C. Bovey, retired chairman of Norcen Energy Resources Limited, whose sense of industrial development and community involvement, spearheaded the growth of Norcen's integrated organization; Henry Birks (1840-1928), whose innovative retailing genius created the world's largest family-owned jewellery merchandising institution, Henry Birks & Sons Limited; Samuel Bronfman (1891-1971), a Canadian whose insistence on quality transformed his company, The Seagram Company Limited into the world's largest producer of wines and spirits; Donald Gordon (1901-1969), a man whose energy and courage brought him through four successful careers including the presidencies of the Canadian National Railway and British Newfoundland Corporation; and Joseph Vachon (1906-1966) who, pioneering automated production concepts in his bakery, built one of the largest food industries in Canada, Vachon Incorporated, now integrated with Culinar Incorporated.

The Canadian Business Hall of Fame, established in 1979 by Junior Achievement of Canada, honours Canadians who have made "outstanding and enduring contributions to improve the products, the processes, the efficiencies or the human relations of business".

The intent is to honour leaders both living and dead: those currently occupying active executive positions do not qualify, as their books are still open.

More than 11 000 teenagers in 67 Canadian communities are actively involved in the Junior Achievement of Canada organization. In addition to the regular learn-by-doing program that offers young people the opportunity to manage their own miniature businesses, Junior Achievement has introduced a new in-class educational course called Project Business, that brings the expertise of qualified business people into Grade 8 or 9 classes.

First test-tube twins born

An Ontario woman has become the first in North America to give birth to twins conceived in a test-tube.

Kit Rankin of Oakville, near Toronto gave birth to the twins, Collin Patrick Hugh and Gregory Robert Ian at Oakville-Trafalgar Memorial Hospital on March 25. On hand for their arrival into the world — two weeks ahead of schedule — was test-tube conception pioneer Dr. Patrick Steptoe, who helped conceive the babies in a portable laboratory in England.



From left to right: Ian Rankin, Dr. Steptoe, and Dr. Richmond-Peck, who delivered the twin boys to Kit Rankin.

The twins were a surprise to some of the hospital staff because ultrasound tests had convinced them Mrs. Rankin would have a girl and a boy but both she and husband, Ian, felt certain they would be boys.

Collin Patrick Hugh is named for Steptoe and father Ian's late father. Gregory Robert Ian is named for Dr. Gregory Richmond-Peck, who delivered the children, Dr. Robert Edwards, who pioneered the revolutionary petri-dish fertilizer technique, and for father Ian.

The babies were conceived by the in-vitro technique — using Mrs. Rankin's own eggs fertilized by her husband's sperm.

The first attempt to implant a two-day old embryo into Mrs. Rankin last July was a failure and so on the second attempt the couple doubled their odds of having a baby when two eggs were extracted and fertilized.

Mrs. Rankin, who has two children

from a previous marriage, could not conceive naturally because her fallopian tubes were removed following two ectopic pregnancies in which the fertilized egg develops outside the uterus.

When both fertilized eggs were implanted, Mrs. Rankin said she thought it was "terrific" with twice as good a chance of success. "We laughed," she recalled and said: "Oh, wouldn't we love to have twins, but we just hoped we'd be lucky enough to have one."

World-wide business communications system planned

Canadian telecommunications carriers are planning to offer a new world-wide business communications system.

The new international standardized service, called Teletex, will allow office text machines from different manufacturers to communicate with each other. The Computer Communications Group (CCG) of the Trans-Canada Telephone System has announced that the new system will be made available to Canadian users over the public telephone network probably by fall.

It is expected that Britain and Sweden will also introduce Teletex into commercial service later this year, to be followed by service in other countries in 1983.

Teletex is the first such service in North America that conforms to international standards developed by the International Telegraph and Telephone Consultative Committee.

CCG is working with terminal manufacturers to develop equipment incorporating the Teletex standard. Siemens Electric Limited of Pointe Claire, Quebec, Olympia Business Machines Canada Limited of Toronto and Olivetti Canada Limited of Toronto are all reported to have equipment ready that conforms to the standard. Micom Company and AES Data Limited, both of Montreal, and Wang Laboratories Incorporated of Lowell, Massachusetts, are vendors who expect to be involved in some capacity with the new system.

Michael Corlett, CCG's general manager said that international agreement on standards by carriers and terminal manufacturers will bring the "office of the future" concept closer to reality. Users will be able to select a terminal by most manufacturers and still be able to communicate with products in Canada and abroad made by other manufacturers.

Bunker-like home keeps out chilling winter winds

An Ottawa computer consultant has designed an energy-efficient bunker-like home with the help of a computer.

Geoff Cook's concept combines a south-facing expanse of glass with concrete and styrofoam walls.

The Cook house was built on a hill in west Quebec at a cost of \$100 000. It costs 25 cents a day to heat. One plug-in baseboard heater and a small wood stove provide supplementary heat for the house.

Resembles a bunker

The 297-square metre home, which local residents call "The Bunker" was not built in a conventional design. The footings were laid after the lot was substantially backfilled to provide a base for the house. The foundation, which extends to the footings, consists of a 15-centimetre layer of styrofoam at the base of the footings, topped by a 15-centimetre slab of concrete.

The north, west and east walls of the house are solid expanses of terracotta concrete, broken only on the north side by the front door. The south wall, measuring 5.5 by 13.4 metres, consists of large panes of doubled-glazed glass held in place by a grid of concrete.

The solid walls are built somewhat like a concrete and styrofoam sandwich with 25.5 centimetres of regular styrofoam and 5 centimetres of sprayed urethane foam nestled between two concrete walls, each 6.5 centimetres thick. Within the styrofoam, every 60 to 90 centimetres, are concrete studs.

The slightly sloping roof is covered with 136 tonnes of earth.

Absorbs heat from sun

The combination of materials literally absorbs heat from the sun, radiating it into the house and storing it long enough to keep the house warm at night. In addition the house is impervious to wind.

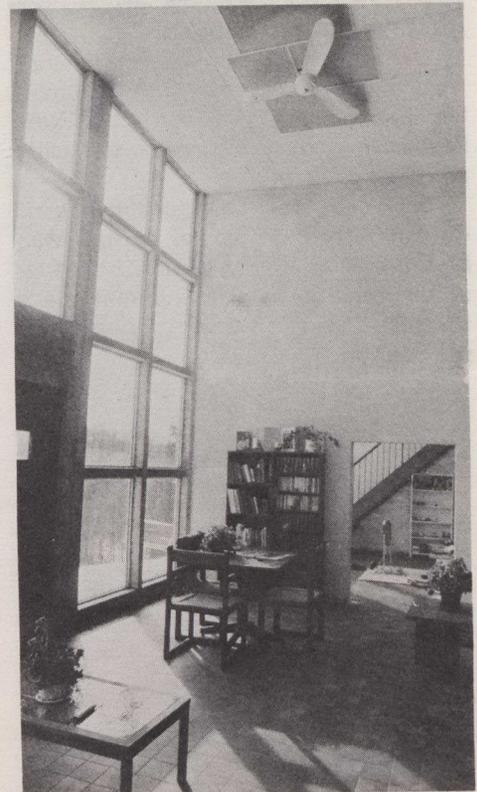
With conventional construction and heating systems, the walls of a house are usually cold. The walls of the Cook house are warm, radiating heat into the house.

The frigid temperatures and overcast skies of January provided the real test of the house. During that period, the house's thermo-humidograph consistently registered temperatures between 14 and 20 degrees Celsius, and humidity levels between 45 and 50 per cent. When the interior temperature fell below 15 degrees Celsius, the single (5 118 Btus per hour) baseboard heater would switch on. The Cooks also resorted to using their wood stove, buying two bush cords of wood so far this winter.

Two levels in interior

The interior of the house is divided into two levels. The upper floor, or entrance level, contains a living-dining room, den, bathroom, and kitchen-family room. All rooms overlook the ground floor "winter patio" and the playroom.

At the rear of the lower floor are a guest room, a bedroom, a storage room and a large ensuite bathroom off the master bedroom. All these rooms have



Winter patio with playroom at end.

windows and doorways, opening onto either the winter patio or playroom, that lets light into the back regions of the building.

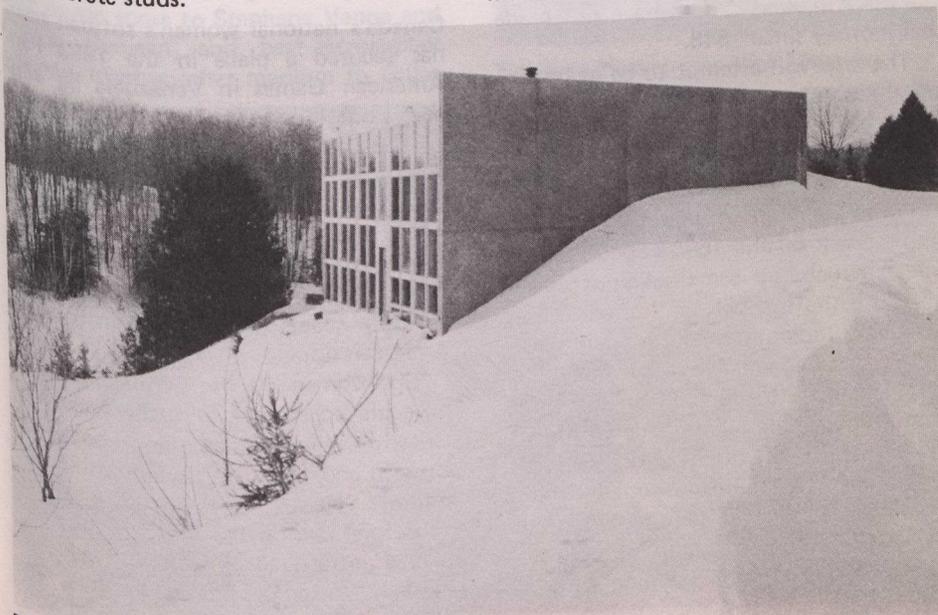
The house is designed in three distinct sections. The left side of the house is formal, with the living room above and the master bedroom beneath. The middle is the service area with bathrooms, storage facilities, entrance, and the den with its airtight Kingsman wood stove. The right side, with the kitchen and a child's bedroom, is the family area.

Excessive humidity levels

The house does have a few problems, most of which the Cooks plan to rectify this spring. The major difficulty is the high humidity level which results in pools of water along the base of the windows.

Cook has been modifying the design of the foundation to help combat the problem and he will present the modified plans to a group interested in utilizing his ideas in the construction of a 65-unit retirement village in Kentucky. For that project 30 centimetres of styrofoam would be placed along with granular fill around everything, including the footings.

In addition Cook plans to install a heat exchanger into his own home and is considering various methods of covering the windows at night and during overcast days.



The Cook home has a wall of glass and its roof is covered with earth.

Rod MacIvor photos

First woman sea captain

Natalie Schwantje of British Columbia has become the first woman in Nova Scotia and perhaps in Canada, to qualify as a Class 3 fishing master.

Department of Transport computers do not record the sex of persons who have passed qualifying exams, but as far as the department can determine she is the first Canadian woman to qualify for the position.



Natalie Schwantje charts her future course as a fishing vessel captain.

The fishing master Class 3 papers were received recently by Captain Schwantje from the Nova Scotia Fisheries Training Centre at Pictou, Nova Scotia. The papers qualify her to be a captain of any fishing vessel of unlimited tonnage fishing in "voyage three" waters. That area includes all waters off the coast of North America to 120 miles from the shore, and extends to below the Panama Canal.

Students who take the Class 3 course must have had 24 months sea time on vessels larger than 14.15 cubic metres which worked beyond the smooth water limits. Captain Schwantje accumulated three years' working experience on the West Coast and on shrimp boats in Florida, where she took a deckman's course.

Captain Schwantje said there is a very professional attitude in the East Coast fishery, and she hopes to obtain employment in the region.

"For the most part the B.C. fishery is seasonal," she said. "Here there are a lot more large fishing vessels and a tradition I like."

New petrochemical terminal

The British Columbia, Alberta and federal governments have announced an agreement on a new terminal on the northern coast of British Columbia for shipment of petrochemicals to Pacific Rim markets.

Under the agreement, the National Harbours Board will build the terminal at Kaien Island or Ridley Islands in time to handle petrochemical shipments from Alberta in 1984.

Ridley Island is also to be the site of a new \$200-million coal port and a \$260-million grain terminal.

Selection of a developer and operator for the onshore facilities of the petrochemical terminal is to be the responsibility of Alberta.

The three governments, represented at a meeting in Ottawa by federal Transport Minister Jean-Luc Pepin, British Columbia Industry Minister Don Phillips and Alberta Economic Development Minister Hugh Planche, agreed to co-operate with the appropriate environmental agencies to ensure the new development conforms to regulations.

Canoeists to retrace historic trip

This spring 16 canoeists will re-enact a 1 272-kilometre trip made in 1648 from Quebec City to Georgian Bay.

The trip, scheduled for May, will retrace the water route from the Quebec capital to Ste. Marie Among the Hurons, a reconstructed mission near Midland, Ontario. Jim McKinnon, who is organizing the trip, said canoes have not made that journey since 1648.

The trip will attempt to be as historically accurate as possible with each of the canoeists assuming the character of a person who made the previous trip. A Roman Catholic priest from Midland, for example, will assume the role of a Jesuit priest on the 1648 expedition and will conduct the same religious duties. Food for the trip will be limited to corn gruel (an Indian staple), fish and game, and French Canadian voyageur fare.

The canoes to be used on the three-month voyage are being made with glass-fibre instead of birch bark, said Mr. McKinnon. He said that quality birch bark was hard to find and that the canoeists would not have the time to stop to do the necessary patching of birch bark canoes.

Mr. McKinnon recently travelled the

route — up the St. Lawrence to Montreal, up the Ottawa and Mattawa Rivers, across Lake Nipissing and down the shore of Georgian Bay — to line up campsites, arrange supplies of water and game and to acquaint townspeople along the way with the project.

High tides and strong currents

The most treacherous part of the trip will be the stretch above Quebec City, where 16-foot tides and a strong current will hamper paddling. The party will also have to watch for ships along the entire stretch of the St. Lawrence.

Most of the canoeists are former workers at the Ste. Marie mission. To prepare them for the journey, tough fitness schedules and equally difficult historical readings have been assigned.

The participants are tested in both areas each month. They must pass written tests and take part in 80-kilometre snowshoe and ski trips. They must also take first aid and orienteering courses.

The trip in 1648 was made to supply the Jesuit mission near the present site of Midland, on southern Georgian Bay, with French goods. Five priests and 11 laymen, accompanied by 200 Huron Indians, were members of that party.

Several journals have survived from the 1648 expedition and will be compared to similar journals planned by members of the 1982 expedition to help measure man's impact on the rivers and their wildlife.

Softball team qualifies for games

Canada's national women's softball team has secured a place in the 1983 Pan-American Games in Venezuela by winning a qualifying tournament in Mexico.

The Canadian team defeated six other teams to finish 11-1 in the tournament. They lost only to Puerto Rico, which finished second in the double round-robin competition. The United States placed third while Belize finished fourth. The top four teams will compete in the Pan-American Games.

Six women on the 20-member team have played softball with the Agincourt, Ontario team which won both the Ontario and Canadian championships last summer.

Before leaving for Mexico, the team played intrasquad and exhibition games in San Antonio, Texas. In July, the women will compete for the World Softball championships in Taiwan.

Canadian film industry presents honours to its best

Ticket to Heaven, directed by Ralph Thomas, received the Genie award as the best Canadian film of 1981 from the Academy of Canadian Cinema in ceremonies held recently in Toronto.

The Genie awards are divided into 18 categories and voting is done by the members of the Academy of Canadian Cinema. All members vote for the best film, but only the professionals themselves vote in each category — for example, producers vote for producers.

Film on cults

The film, *Ticket to Heaven*, produced by Vivienne Leebosh, Ronald I. Cohen and Alan Simmonds, relates the story of a man who was brainwashed and then saved from a San Francisco religious cult. It has been viewed in a number of Canadian and U.S. centres where it has been critically acclaimed. In July 1981, it was awarded the grand prize at the Taormina Festival in Sicily.

The Plouffe Family, *The Amateur* and *Heartaches* had also been nominated for the best picture award.

Ticket to Heaven received a number of Genies including Nick Mancuso for best actor, Saul Rubinek for best supporting actor and Ron Wisman for best film editing.

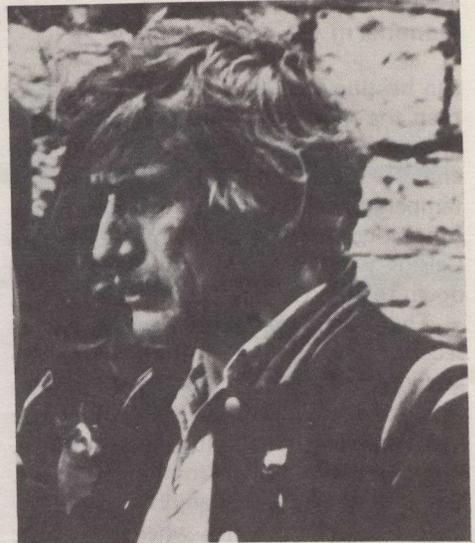
The Plouffe Family took most of the awards, winning seven: best director to Gilles Carle; best supporting actress to Denise Filiatrault; best art direction to William McCrow; best costume design to Nicole Pelletier; best original song and the best music score to Stephane Venne and Claude Denjean; and best screenplay adapted from another medium to Gilles

Carle and Roger Lemelin.

Margot Kidder won the best leading actress award for her portrayal in *Heartaches*. Other awards for *Heartaches* included best original screenplay to Terry Heffernan and best performance by a foreign actress to Annie Potts.

Genie awards were also presented to Richard Leiterman for best cinematography in *Silence of the North* and to Alan Arkin for best performance by a foreign actor in *Improper Channels*. The film *Heavy Metal* won two awards with Peter Jermyn, Andy Malcolm and Peter Thillaye receiving the award for best sound editing and Dan Goldberg, Austin Grimaldi, Joe Grimaldi and Gordon Thompson taking the award for best sound.

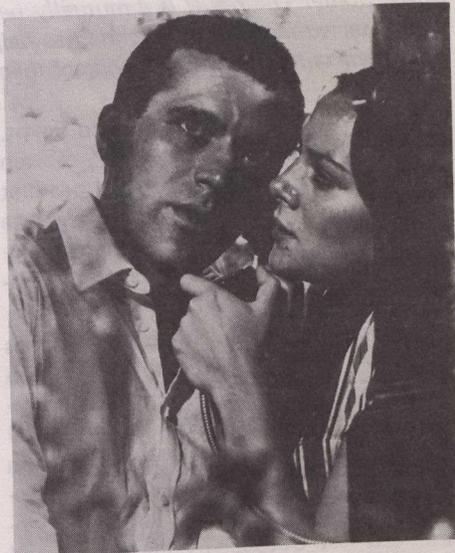
The theatrical short award went to André Leduc and Jean-Jacques Leduc for



Plouffe director Gilles Carle.

Sea and the theatrical documentary award was given to Holly Dale and Janice Cole for *P4W: Prison for Women*.

In addition to the award ceremonies, two major receptions were held during the day. Among the personalities involved in the activities were Peter Ustinov, Mariette Hartley, Glenn Ford and Gale Garnett.



Ticket to Heaven star Nick Mancuso.



Annie Potts (left) and Margot Kidder in the film *Heartaches*.

Mennonite history to be filmed

Canadian Mennonites are preparing a dramatized 90-minute documentary film tracing their own history.

The film's working title is *And When They Shall Ask*, a reference to biblical scriptures such as a verse in Joshua that gives instructions to teach descendants about the past.

The Mennonites left Prussia at the invitation of Catherine the Great in 1788 to settle on the steppes of Russia and later migrated to nations around the world. There is a large Mennonite population in the western Canadian provinces.

Dave Dueck, executive producer of the film and Cornelius Krahn, a noted Mennonite author and lecturer, are visiting western Canadian communities to raise money for the project. Dueck, president of Dueck Film Productions Limited of Winnipeg, said the project has a budget of \$300 000 and enough financing has been raised to start filming.

Dueck's company produced a documentary of the Mennonites of Paraguay where large attendance at showings of the film indicated there is an awakening of interest in Mennonite heritage.

Canadarm (Continued from P. 2)

sun heating tests. In each test the tail and then the nose were pointed to the sun for extended periods to see if the *Columbia* and the Canadarm could endure extreme temperatures. Surfaces on the side of the sun endured temperatures of 100 degrees Celsius while areas in the shade cooled down to about minus 130 degrees Celsius.

There had been some concern on the second day of the mission when the astronauts discovered that 37 of the silica tiles of the 30 000 which prevent the space shuttle from burning up on re-entry, had been torn away from the fuselage. None, however, had been damaged below the so-called sear line where the heat would be the greatest.

A fourth test flight is expected in June and provided all goes as expected, the shuttle will begin hauling cargo into space for military and commercial customers in November. At that time two satellites — one of them a Telesat Canada telecommunications satellite — are due to be carried into space.

NASA expects the successful third test of *Columbia* and Canadarm to generate more customer interest in the space shuttle but the 70 flights until September 1987 are fully booked with communications, weather and military satellites, planetary missions, science labs, and materials-processing payloads.

News briefs

Environment Minister John Roberts was the keynote speaker at a recent meeting of the United States National Wildlife Federation held in Milwaukee. Mr. Roberts speech on the subject of acid rain called for balanced and co-operative efforts to reduce acid rain which would result in benefits for both Canada and the United States.

The federal and Nova Scotia governments with the co-operation of industry, will establish a pilot plant to test technology for the construction and operation of an energy-efficient fluidized bed combustion generating plant. The pilot plant is planned as a preliminary and essential step in an over-all plan to build a 150 megawatt fluidized bed generating plant in Nova Scotia using this technology.

The Export Development Corporation (EDC) has signed a \$97.6-million (U.S.) financing agreement to support a sale by The de Havilland Aircraft of Canada



Patients at the Rideau Veterans Home in Ottawa cuddle puppies as part of a program by the Ottawa Humane Society which brings small animals — puppies, kittens and rabbits — to the home. The result is a mutually beneficial sharing of joy and affection. The program, started in 1980, is intended to help aging veterans practise their social skills and keep their minds active by "giving of themselves" to the homeless pets.

Limited of Downsview, Ontario to Egypt. The \$128-million (Cdn.) sale of ten *Buffalo* aircraft, spare parts and product support services is expected to generate 2 770 person-years of employment mainly at The de Havilland Aircraft of Canada Limited.

Federal tourism minister Charles Lapointe has announced a \$5.4-million Prince Edward Island tourism development program and a \$900 000 industrial development program. Both are part of a \$92.2-million federal economic development strategy for P.E.I. originally announced last October by the federal and provincial governments.

The Special Parliamentary Committee on the Disabled and the Handicapped has produced two publications designed to advance the cause of disabled people in Canada. The first is a streamlined school edition of its *Obstacles* report which presents profiles of disabled people across the country along with some of the committee's recommendations to the government on improving conditions for the disabled. The second publication is entitled, *Follow-up Report: Native Population*, which addresses the special problems of disability among Canada's native people.

Quebec and New York State have signed a 13-year, \$6-billion hydroelectric power export contract. Hydro-Quebec and the Power Authority of the

State of New York are exploring new ways of financing substantial capital costs of major hydro-electric developments.

A University of Waterloo professor has sold the rights to his technology for converting agricultural and forest wastes into animal food supplements to a French company. Innotech will pay \$2 million for the rights to the process which will be used in its conversion plants in Europe. The process, developed by Murray Moor-Young, a chemical engineering professor at the university, uses fermenting containers and a fungus to break down undigestible husks, leaves and wood into a high-quality protein supplement for animals.

Canada Weekly is published by the External Information Programs Division, Department of External Affairs, Ottawa K1A 0G2.

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Cette publication existe également en français sous le titre Hebdo Canada.

Algunos números de esta publicación aparecen también en español bajo el título Noticiero de Canadá.

Alguns artigos desta publicação são também editados em português sob o título Notícias do Canadá.

Canada

ISSN 0384-2312