

Canada Weekly

Ottawa
Canada

Volume 12 No. 14
April 4, 1984

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Space age SOS: search and rescue by satellite

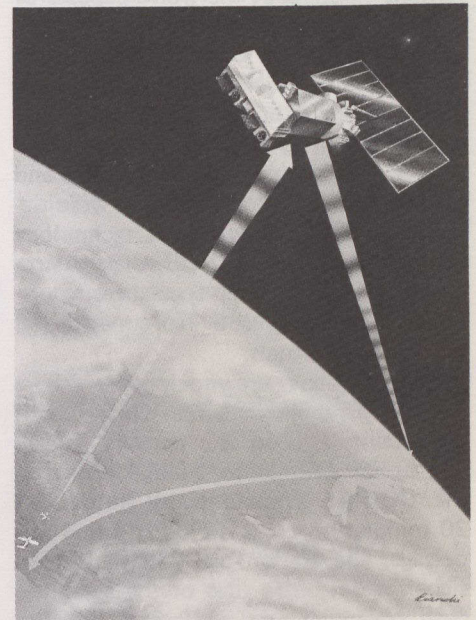
On September 9, 1982, a small aircraft carrying three people crashed in a forest in northeastern British Columbia. Although the pilot and his passengers had been injured, they were able to repair the antenna of their radio transmitter, damaged by the impact, and send out a distress signal. As a result of a Soviet satellite relaying the distress signal, they were found less than 28 hours after the accident.

The satellite, COSPAS 1, is the first link in a new international network to locate distressed ships and aircraft. It has been tested since September 1982 by Canada, the United States, France and the Soviet Union, and is expected to save many lives in the years to come, as well as millions of dollars in rescue costs.

It could also open up new markets for a Canadian company which makes one of the key components, the ground station that receives the distress signals relayed by satellite.

When an aircraft crashes in a remote area of Canada, the high Arctic for example, the Department of National Defence must launch expensive search and rescue operations, requiring several aircraft and dozens of people. Locating a downed aircraft could take several days, yet the survival of injured people may hinge on being rescued only a few short hours after the crash. The time lost because distress signals from ships or aircraft are not immediately picked up, as well as the delay in organizing a rescue operation, underscore the need to quickly pinpoint the origin of such signals.

Since the early 1970s, most commercial and non-commercial aircraft have been equipped with beacons (radio transmitters) which send out distress signals. The concept, developed by Canada's Department of Communications, relies on the beacon surviving when a plane crashes (see box). Unfortunately, the efficiency of these beacons is limited by their low signal power (less than one tenth of a



watt); normally, their signals can be picked up only within a range of 50 to 70 kilometres. Mountains too may block the signal transmission, reducing its range even more.

Finally, the batteries for the beacons only last 48 hours. The distress signal could, therefore, cease before a rescue team has a chance to locate the distressed ship or aircraft.

International team

The idea of using satellites to monitor distress signals is now new. It goes back to the 1950s before the advent of the satellite era. Canada and the United States began working independently at first, but got together in 1977 to develop the SARSAT program (Search and Rescue Satellite). Shortly after, they were joined by France.

The USSR, which had developed a similar project called COSPAS, reached an agreement with the SARSAT group in 1977 on joint technical specifications which have increased the efficiency of this world-wide system for locating distressed ships and aircraft.



External Affairs
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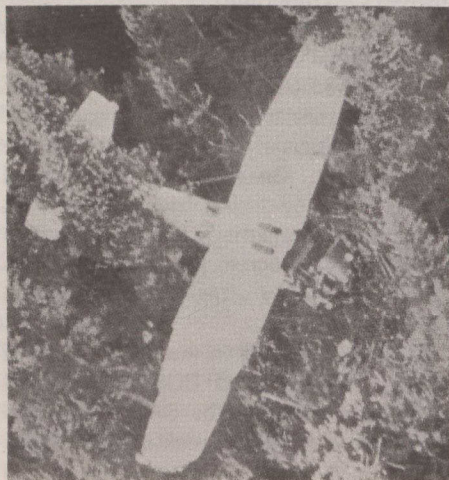
In the summer of 1982, the Soviet satellite COSPAS was launched into a polar orbit around the Earth, equipped to relay distress signals on an international frequency of 121.5 MHz. The satellite circles the Earth in 100 minutes at an altitude of 1 000 kilometres. With the launching last March of the American satellite TIROS-N, all areas of the world are now monitored twice as often.

Canadian ground stations

There is now a growing number of ground stations throughout the world capable of receiving signals relayed by the SARSAT-COSPAS satellites. Canada's Department of National Defence, responsible for Canadian rescue operations, has a ground station at Shirley Bay near Ottawa; there are four others in the United States and one in France. All six stations were designed and built by a high technology company in Ottawa, Canadian Astronautics Limited, which specializes in systems engineering and real-time digital processing of signals.

The stations are equipped with a 3-metre parabolic antenna which tracks the satellite as soon as it appears. Travelling at an altitude of 1 000 kilometres, the COSPAS satellite takes only about 20 minutes to cross the sky. During this passage, the station can receive distress signals from both sides of the satellite's path, covering a total width of 4 000 kilometres. Ten minutes after the satellite has crossed over Canada, the computers at the Ottawa ground station have finished processing the data received, and can calculate the origin of any distress signal within a few kilometres.

James Taylor, president of Canadian Astronautics Limited, explains that, while sophisticated computers are needed to



It is not easy to spot a downed aircraft in the mountains of British Columbia.

In the past, many airplane radio beacons for sending distress signals were either destroyed during impact, buried under wreckage, or lost under water. To get around this problem, Ottawa engineer Harry Stevenson, formerly of National Research Council's (NRC) National Aeronautical Establishment, came up with a way of ensuring that such a beacon would escape destruction during a crash.

Mr. Stevenson's device, called a Crash Position Indicator (CPI) has no moving parts; it is attached to the body of an aircraft by a spring latch, or it can be fitted into the fuselage. At the moment of impact, it is hurled away from a crashing aircraft, its streamlined shape allowing it to land safely a short distance away; immediately, it starts to transmit a distress signal, no matter what its orientation (upside down, sideways, whatever). Mr. Stevenson, who designed the airfoil and its escape mechanism, worked in collaboration with NRC's W.A. (Bill) Cumming, who designed the antenna, and David Makow, who built the radio beacon.

Used by air forces in many countries, including Canada, the CPI is built by Leigh Instruments Ltd. of Carleton Place, Ontario. The device can also be equipped with a flight recorder, an electronic instrument which records an aircraft's manoeuvres in flight as well as the performance of its systems. This information is vital in determining the cause of an accident and avoiding its reoccurrence.

process the huge quantities of complex data, the method used to pinpoint distress signals within the SARSAT network is based on a principle that has been known to physicists for a long time — the Doppler effect. The classic Doppler example known to all science students is the changing tone of a train's whistle, which has a high pitch as the train approaches, and fades to a low pitch as the train moves away. The same effect applies to the frequency of a radiobeacon signal from an aircraft or ship in relation to an orbiting satellite. Because ground-based computers know the frequency of the signal sent from the distress site, they can compute the Doppler shift in the signal received by the satellite. This, in conjunction with precise data on the

Canadian Forces

spacecraft's orbit, allows the ground station to locate the distress signal's origin with great accuracy. The computer can provide the co-ordinates of an accident site with a margin of error of eight to 30 kilometres. The accident in British Columbia was pinpointed to within 22 kilometres.

Once the co-ordinates of an accident site are received at Shirley Bay, they are transmitted to the Canadian Rescue Operations Co-ordinating Centre at Trenton, Ontario, which contacts the Canadian Forces base closest to the site, and a rescue mission is dispatched.

Since the first rescue operation in British Columbia, the SARSAT-COSPAS satellite search and rescue system has been used successfully dozens of times, and countries such as Brazil and Australia are now interested in participating. The future thus looks very bright for Canadian Astronautics Limited, as well as for other Canadian companies, such as SED Systems in Saskatoon and Spar Aerospace in Montreal, which manufacture special electronic equipment for the SARSAT program.

Almost 9 000 rescue missions are organized each year in Canada for distressed ships and aircraft, at a cost of almost \$100 million. With SARSAT, costs should be greatly reduced and rescue operations made much more efficient.

(Article from Science Dimension.)

Canada pledges food aid

Agriculture Minister Eugene Whelan has announced a \$310-million grant in international food aid for 1985 and 1986, making Canada the world's second-largest food donor after the United States.

Canada's aid package, which includes cash and \$250 million in Canadian farm products, is expected to represent about 20 per cent of total United Nations aid to the world's hungry. The new commitment is \$30 million more than Ottawa currently contributes to the UN World Food Program and International Emergency Food Reserve.

Much of Africa is suffering the worst drought in memory, and famine there is believed to be worse than during the crisis years of the early 1970s, when a hastily called conference resulted in the creation of the World Food Council. The United Nations estimates that Ethiopia alone requires 200 000 tonnes of food to prevent mass starvation.

King and Queen of Spain make first official visit to Canada



Canapress

Honouring a six-year-old invitation from the Canadian government, King Juan Carlos of Spain and his wife, Queen Sophia, made their country's first official state visit to Canada, March 12 to 18. The royal couple arrived in Ottawa March 12 where they met with Governor General Edward Schreyer and political leaders including Prime Minister Pierre Trudeau and the leaders of the two opposition parties. They then travelled to Montreal, Toronto, Victoria and Vancouver, meeting with provincial leaders and members of the Spanish community. In Ottawa, Governor General Schreyer (second from left) hosted a state dinner for the royal couple, shown with Prime Minister Trudeau (right).

Canada to host ILO conference

Labour Minister André Ouellet has announced that Canada will host the twelfth regional conference of American states members of the International Labour Organization (ILO). The conference will be held in Ottawa in 1985 and will focus on rural development including the problems of indigenous populations, as well as labour relations.

These regional conferences, which are held every four or five years, attract representatives from the 25 American member states of the ILO, as well as observers from member states outside the region and international governmental and non-governmental organizations. Canada last hosted an ILO regional conference in 1966.

The purpose of the conference is to review aspects of ILO activities in the four ILO regions of Asia, Africa, Europe and the Americas. The American region includes the United States, Canada and the countries of Latin America and the Caribbean.

Science centre aids Third World

Biotechnology applications in developing countries will be promoted by a Microbiological Resource Centre being established by two Ontario universities.

The centre, set up by the universities of Guelph and Waterloo, is sponsored by the United Nations Educational, Scientific and Cultural Organization (UNESCO). It is one of 12 such establishments in the world, and the only one in Canada.

The centre will draw on Guelph's expertise in agriculture and Waterloo's experience with computers, biological science, and engineering to conduct research on fermentation and biomass conversion.

Biomass, a term which describes anything that is alive or that was once a living material, can be converted by fermentation and other methods to food, fuel and chemicals. Acceptance of biomass technology has been hampered by its high cost and the lengthy conversion processes, which can take as much as several weeks.

Biomass materials include a large number of waste byproducts of agriculture, forestry and the paper-making and food-processing industries; but much of the centre's research will deal with cellulose, according to Murray Moo-Young, director of Waterloo's Institute for Biotechnology Research.

The two universities are also developing a computer-based conferencing system to allow the UNESCO centres to exchange information. A prototype system, based on an electronic conferencing software package developed at the University of Waterloo, is being tested in conjunction with the International Development Research Centre, headquartered in Ottawa, and the United Nations University in Tokyo.

In addition, the centre will provide training in biomass conversion technology to scientists from Third World countries. UNESCO is co-sponsoring a biomass symposium this summer at the University of Waterloo.

Test laboratory for rare diseases

Canada's first laboratory for testing rare contagious diseases is being built by the Ontario government.

The laboratory, which should be ready by spring 1985, will mean that blood and tissue samples from Canadian residents or visitors suspected of suffering from exotic, possibly fatal diseases will no longer have to be sent to the United States for analysis.

There are only two laboratories in North America able to safely study dangerous viruses. They are the Centres for Disease Control in Atlanta, Georgia, and a US military centre at nearby Fort Detrick. The Ontario laboratory, to be located in Toronto, will cost \$2.8 million to build.

Dr. Bernadette McLaughlin, head of the health ministry's laboratory services branch, said the new centre means testing can be done more quickly and less expensively than if samples were sent to Georgia.

The laboratory will test for rare diseases such as Lassa fever, an often fatal influenza-like virus originating in Africa, encephalitis and Q-fever, a rare influenza that strikes half a dozen Ontarians annually.

All tests will be done in air tight, stainless steel cabinets, and all material will be sterilized before removal from the cabinets and from the laboratory.

Brain waves used to activate machine systems

The prospect of getting a machine to perform a task simply by thinking about it may not be as far-fetched as it seems. It could be demonstrated soon by a group of researchers at Simon Fraser University in Richmond, British Columbia, who have a contract to study the magnetic fields produced by nerve cells in the brain.

Contracts have been awarded to Simon Fraser University researchers and to a company in Port Coquitlam, British Columbia, to apply the research to medical diagnosis and to military applications, including use of brain waves to activate machine systems.

At the heart of the work is a device called a biomagnetometer, manufactured by CTF Systems Inc. It measures the electromagnetic field generated when impulses travel between neurons — the nerve cells — in the brain. The field is generated by the electric current associated with the impulse when it jumps between two neurons at the intervening synapse.

There are two technologies in widespread use for diagnosing neurological disease that differ from this technique: — Electro-encephalography, or EEG, uses electrodes that must contact the skin and is limited to measuring the electric potential of the brain's tissue. EEG's disadvantage, when compared to biomagneto-

metry, is that it requires electrodes, said CTG president Maxwell Burbank. The measurements are affected by the brain tissue and surrounding bone and skin.

The ability of an EEG to provide brain function data is correspondingly limited, because it provides less specific information.

— The basic anatomy of the brain, and effects of disease on it, can be analyzed by several medical imaging technologies, such as X-rays, CAT scans and ultrasonics. But a problem can only be discovered if it results in changes to the structure of the brain.

In contrast to EEGs, the magneto-encephalography (MEG) technology employed by CTF's device allows for "accurate source localization of brain function in addition to providing an independent and uniquely characterized signal", Mr. Burbank said.

The benefits of MEG are twofold: it can be used to diagnose and localize disorders that may not produce anatomical distortions in the brain and it can be used by scientists to map the functions of the brain's regions.

"If systems in the brain responsible for regulating complex human responses can be accurately understood, then they can be predicted and utilized in human per-

formance evaluation and diagnosing neural disorders," said Harold Weinberg, director of the MEG team at Simon Fraser's Brain Behaviour Laboratory.

CTF is one of only three companies in the world, and the only one in Canada, making the biomagnetometer. Its commercial application as a medical diagnostic tool has been limited by the lack of an easily manoeuvrable housing enabling it to take pinpoint measurements of the brain.

By combining the biomagnetometer with a gantry system and associated mapping and scanning technologies, CTF hopes to enter the medical imaging market.

Europeans invest in Ontario

Ontario's Industry and Trade Minister Frank Miller returned from Europe recently with at least three major manufacturing investments confirmed.

The projects — two joint ventures in the automotive industry and a direct investment in the steel sector — are expected to bring millions of dollars and hundreds of jobs to Ontario.

The deals confirmed by Mr. Miller are:

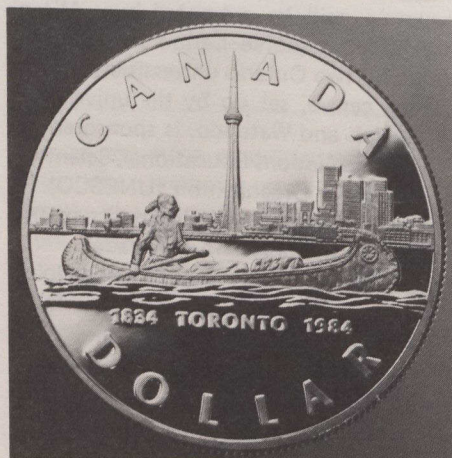
— O.S.B. Company S.A., a Belgian firm, will build a \$12-million factory in the Brantford area, outside Toronto, to make forged steel rolls for the sheet metal industry, which is expected to be in production in 15 months.

— Société Anonyme des Usines Chausson, a French company, is going into partnership with Magna International Ltd. of Markham, Ontario, to establish an \$8-million factory in the Toronto area making aluminum radiators for automobiles. The plant, to be in production in March 1985, will produce 350 000 radiators at first and up to 600 000 ultimately. Some of the output will go into North American products of Renault, which is a major shareholder of Chausson.

— Brown Boveri & Cie. of Heidelberg, West Germany, has entered a joint venture with an Ontario company to manufacture sodium-sulphur batteries for electric vehicles. The batteries, which function at 350 degrees Celsius, have four times the power by weight of conventional lead-acid batteries.

The minister visited Germany, France, Belgium and England in the course of a 16-day trade and investment promotion tour.

New silver dollar celebrates Toronto's anniversary



Canada's 1984 silver dollar commemorating the one-hundred-and-fiftieth anniversary of the city of Toronto was issued recently by Minister of Employment and Immigration John Roberts and the Mayor of Toronto, Art Eggleton. On one side of the coin is the city's well-known Harbourfront skyline which is dominated by the CN tower. In the foreground is depicted an Indian paddling a birch bark canoe, a reminder of the origins of Toronto as "a place of meeting." The new silver dollar, nineteenth in a series that began in 1935, is 50 per cent fine silver and sells in Canada for \$16.95 for the "proof" version and \$11.40 for the "brilliant uncirculated".

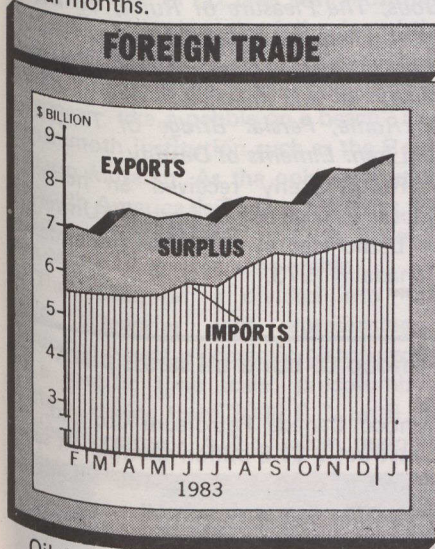
Trade surplus hits record

Canada's trade surplus climbed to a monthly record of \$2.1 billion in January from \$1.65 billion in December.

The surplus widened as exports rose by 3.4 per cent to a seasonally-adjusted \$8.9 billion in the latest month, while imports dropped 2.2 per cent to \$6.8 billion, reported Statistics Canada.

Most of the increase in exports was provided by increased sales of new cars to the United States. Transport equipment sales were worth \$1.2 billion, on an unadjusted basis, compared with \$1.3 billion a year earlier.

Along with the increase in exports, however, imports fell back. The drop was interpreted as an unfavourable sign by economists who saw it as further evidence that Canada's economic recovery is weakening. Anselm London, an economist with the Conference Board of Canada, described the import decline as "rather ominous", especially if it continues for several months.



Oil imports were cut back, following the trend of recent months, but there was also a decline in purchasing of machine tools and industrial equipment.

Generally, Canada's large trade surplus — which amounted to \$18 billion last year — has been caused by a stronger recovery in the United States that has pulled in imports, particularly of cars.

Some economists pointed out that the quickening pace of US economic growth should continue to help Canada, pushing up prices and improving the market for metals and other resources.

In the latest month, the United States took 75.5 per cent of total Canadian exports and supplied 74.8 per cent of imports.

Canada's computer industry featured in Hanover

Nineteen Canadian companies will be exhibiting some of the world's finest integrated electronic office system products at CeBIT 84 to be held in Hanover, Federal Republic of Germany from April 4 to 11.

Canada is the world's eighth largest exporter of computing equipment, with over 125 companies, including some relatively small firms, competing and marketing products successfully on a world-wide basis.

In 1982, Canadian computer industry revenues were approximately \$4.5 billion retail for computers and office machines, and are growing at a rate of about 20 per cent a year. Computer services accounted for an additional \$1.2 billion revenue.

One of the models on display in Hanover is the ECP 1000, the first truly portable colour data-graphics projection monitor from Electrohome Ltd. of Kitchener, Ontario. It projects high-resolution data and graphics from either a full colour computer graphics terminal, a video camera, or a video cassette recorder.



Electrohome's ECP 1000 weighs just 30 kilograms and has important applications in data processing, training and education, and teleconferencing.

Embryos on ice

High technology has entered the Canadian livestock industry. A Calgary firm, Alberta Livestock Transplants Ltd., has developed methods of removing bovine embryos from breeding stock, freezing them for indefinite periods, then re-implanting them in surrogate mothers to complete the pregnancy.

Embryo transfer is already a common practice in livestock breeding, where risks remain high even in the 1980s. A good breeder does not necessarily produce prime offspring every time, and the long gestation period means a costly wait to see how successors will turn out.

Trying to produce the greatest number of good calves in the shortest possible time also means that the breeder cow could drop her calves at inconvenient times. To overcome some of these difficulties, embryos are removed from the uterus of the prime breeder cow and placed in the uterus of another cow. The surrogate need only be in the right condition and strong enough to bear the calf.

Adding the freezing step to the process offers the opportunity for increased yields, but timing is critical in the operation. Both the surrogate mother and the

donor cow must be closely synchronized in their respective estrus cycles, and the transfer must come within seven days after the receptor comes into heat. Since such close timing is not always easily accomplished, the freezing process has been introduced to reduce the timing problems and, consequently, improve the conditions of transporting the embryos over long distances.

It also offers the breeder an opportunity to reduce the threat of undetected diseases which may be passed on to the new generations.

Alberta Livestock Transplants developed its non-surgical embryo removal techniques during the 1970s. Now it is taking embryo transplant technology a step further by embarking on a project to perfect the freezing process.

At the moment only one embryo in three achieves a successful pregnancy after removal from the original mother, but a National Research Council supported research effort expects to improve that to better than one-for-two. Perfection of the technology will lead to a world-wide market for Canadian cattle embryos as well as an improvement in livestock strains.

(Article from Science Dimension.)

Export agreements total \$4 million

The Export Development Corporation (EDC) has signed four financing agreements totalling \$4 million (US) to support the following sales of Canadian capital goods and services to Colombia, Chile, Israel and Mexico.

— A \$2.88-million (US) financing agreement to support a sale by O & K Orenstein & Kippel Inc. of Dundas, Ontario, to Carbones del Caribe S.A. of Colombia. EDC will lend \$2 448 000 (US) to support the sale and The Royal Bank of Canada (Barbados) Limited, \$432 000 (US). The sale involves the supply of three RH-75 hydraulic excavator shovels and three RH-12 hydraulic excavators. The agreement is guaranteed by Cementos del Caribe S.A. of Colombia.

— The forfaiting (purchase) of ten promissory notes totalling \$694 931 (Cdn.)

to support the sale of a cylinder mold and accessories by Ingersoll-Rand Canada Inc. of Montreal to Compania Manufacturera de Papeles y Cartones S.A. of Chile. The notes are guaranteed by Banco Industrial y de Comercio Exterior of Chile.

— A \$329 800 (US) allocation under a line of credit agreement with Bank Hapoalim B.M. of Israel to support a sale of injection molding equipment by Lican Developments Ltd. of Windsor, Ontario, to Techen Enterprises of Israel.

— A \$247 107 (US) allocation under a line of credit agreement with Banco Nacional de Comercio Exterior, S.A. (BCNE) of Mexico to support the sale of a video and audio routing switcher and video distribution equipment by Canamex Electronics Limited (Canamex) of Willowdale, Ontario, to Corporacion Mexicana de Radio y Television, S.A. de C.V. (CMRT) of Mexico.

France, Canada issue Jacques Cartier stamp

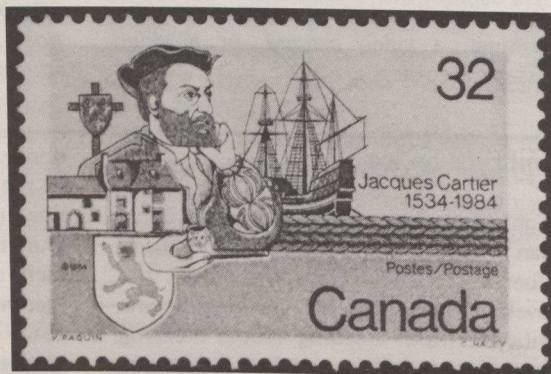
A new stamp to be issued jointly by France and Canada on April 20 will mark the four-hundred-and-fiftieth anniversary of Jacques Cartier's first voyage of exploration to this continent, during which he entered the Gulf of St. Lawrence and landed at Gaspé, Quebec.

André Ouellet, Minister responsible for Canada Post Corporation, noted that Jacques Cartier's voyage in 1534 was the first step in the development of New World territories that were now part of Canada.

"Cartier's reports of having found vast, unspoiled lands of great scenic beauty, abounding in natural resources, led to the arrival of the first European settlers, marking the beginning of Canada's history as a nation," said Mr. Ouellet.

Jacques Cartier left the harbour of St. Malo, France, on April 20, 1534, with two ships and 61 men. He headed for the New World and 20 days later sailed through the Strait of Belle Isle to the Gulf of St. Lawrence. He then followed the coasts of Newfoundland, Prince Edward Island and New Brunswick, reaching Gaspé July 14, where he erected a cross, claiming the land for the French king.

The central figure on the stamp is a stylized portrait of Jacques Cartier holding a clay tobacco-pipe. It also depicts a caravelle, similar to his flagship, named *Grande Hermine*, on which he sailed on his second voyage; the cross he planted at Gaspé; the ancient shield of St. Malo (a guard-dog rampant); and the manor house Cartier owned at Limoëlou, France, during his last years.



Top Canadian photographer dies

Roloff Beny, the internationally known Canadian painter, photographer and graphics designer, died recently in his Rome apartment. He was 60.

Born in Medicine Hat, Alberta, where his father was a car dealer, Roloff Beny won his first fame as a painter, receiving a Guggenheim Fellowship to study in Paris and gave more than 25 one-man shows in Europe and the United States.

His interest gradually shifted to photography and editorial design, which became his main work. He won particular acclaim for his photographic studies of art and architecture.

Roloff Beny was working on a book about Iceland and another of photographs and reminiscences of his famous friends, among them Vivien Leigh, Margot Fonteyne, Noël Coward, art collector Peggy Guggenheim and Gore Vidal.

His books of photographs included: *Thrones of Earth and Heaven; A Time of Gods; The Pleasure of Ruins; To Everything There is a Season; Japan in Colour; India; Island, Ceylon; In Italy; Odyssey; Mirror of the Mediterranean; Churches of Rome; Persia; Bridge of Turquoise; and Iran: Elements of Destiny.*

Roloff Beny received an honorary doctor of laws degree from the University of Lethbridge in 1972 and the Order of Canada in 1973.

Amoco to build oil sands plant

Amoco Canada Petroleum Co. Ltd. will construct a \$1.8-billion thermal oil sands recovery project about 165 kilometres east of Edmonton, Alberta, federal Energy Minister Jean Chrétien has announced.

The first phase of the project, to cost \$50 million over the next 18 months, involves 60 wells, a steam injection plant and a crude oil cleaning plant. More than 1 000 wells could be drilled over the life of the project, Amoco estimates.

Initial production will be 4 000 barrels a day, rising to 26 600 by 1995.

Mr. Chrétien said that under the terms of the agreement, Amoco would pay reduced royalties to the Alberta government until it recovers costs of building the project. The federal government will suspend the Petroleum and Gas Revenue Tax for the same period. He said oil produced from the project would receive the world oil price, about \$36 (Cdn.) a barrel.

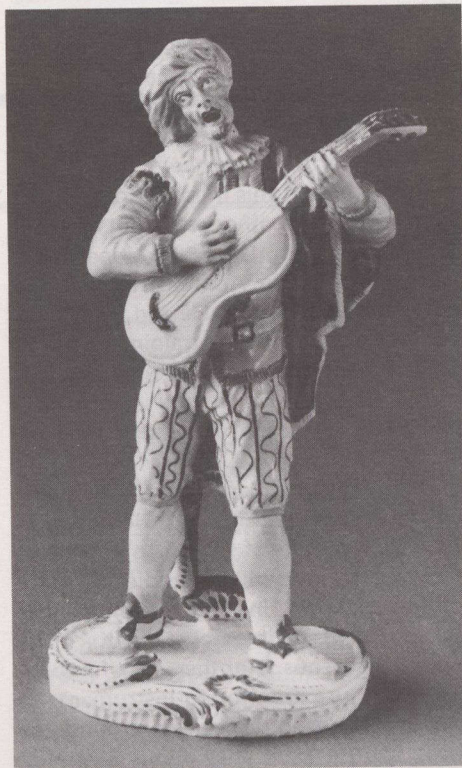
Museum a showcase for rich ceramic collection

A major new museum, which opened recently in Toronto, features a collection of ceramics which many consider to be one of the finest in the world. The 2 000 objects span the centuries from pre-columbian artifacts to the great European ceramic artists of the fifteenth to the eighteenth centuries.

The George R. Gardiner Museum of Ceramic Art has been created by Toronto financier George R. Gardiner and his wife, Helen, to display their diverse collection of porcelain and pottery to as many people as possible. Not only have they donated their collection of objects valued at \$16 million but they have paid the cost of the \$5.9-million building, located opposite the Royal Ontario Museum in mid-town Toronto, and established a \$2-million endowment for operating expenses.

George Gardiner, now 66 and chairman of Scott's Chicken Villas, decided to take advantage of tax laws that allow him eventually to deduct the full value of the public donation from his income. As well, he did not want his prized collection to disappear "like a pebble on a beach" into a mammoth institution such as the Royal Ontario Museum. As the only institution in North America devoted to ceramics, the Gardiner Museum will establish Toronto as a centre for related scholarship.

The collection is divided into four major categories, each representing a particular aspect of ceramic history within a specific time scale: precolumbian pottery, dating from 2000 B.C. until the fifteenth century A.D.; Italian maiolica



Porcelain figure of Mezzetin, probably modelled by Carl Vogelmann. (Circa 1765).

of the fifteenth and sixteenth centuries; English delftware of the seventeenth century and continental and English porcelain of the eighteenth century.

The objects are exhibited in two large galleries. The first floor displays the precolumbian pottery, Italian maiolica and English delftware; the second, eighteenth century European porcelain including Meissen, Du Paquier (Vienna) and "Haus-

maler", as well as Italian comedy figures, scent bottles and English and French porcelain.

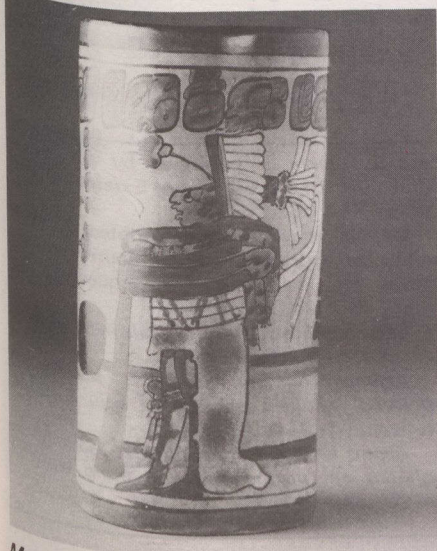
There is also a library, which will be open to the public for research purposes, a lecture theatre, a members' lounge and a gift shop. Workshop, laboratory and a reserve collection storage space are located in the basement and the building is constructed so that another storey can be added.

Work on the Gardiner Museum started about three-and-a-half years ago. The building was designed by Toronto architect Keith Wagland, who proposed a rigidly geometrical building based on a six-metre-square grid. The front end gently pokes onto Queen's Park and has an ample supply of windows to welcome visitors and to light the lobby area, the stairwell, the small library and the offices upstairs. The two galleries lie toward the back of the building.

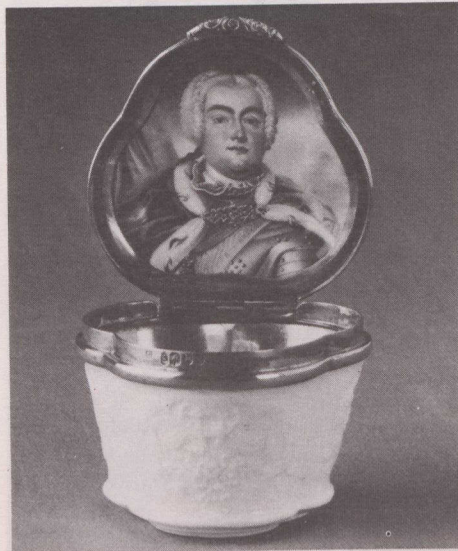
The museum staff refer to the Gardiner Museum as a jewelry box. Each piece — from a tiny porcelain thimble painted with a miniature landscape scene to an imposing Mexican tomb statue in the lobby — is showcased like a gem.

Keith Wagland has designed the display cases "to blend the theatrical with the academic", and to tone in with the colour schemes of the galleries — browns for pottery, greys for porcelain.

The precolumbian pieces, the maiolica and the English delftware are in irregularly shaped oak cases trimmed in black metal and placed around the perimeter of the gallery. The space in the centre is reserved for the showing of other private collections.



Maya polychrome vase painted with a ball game scene. (Circa 550-950).



Meissen porcelain snuffbox, painted with portrait of Augustus Rex inside lid. (1735).



Vienna Du Paquier porcelain hanging wall vase and cover. (Circa 1730).

First Canadian in space



Andrew Clark, United Press Canada

Canada's first man in space Marc Garneau (right) with backup Robert Thirsk.

Marc Garneau, 35, a career naval officer from Quebec, will be Canada's first man in space. He will fly aboard the October 24 mission of the US space shuttle *Discovery*.

While the shuttle is orbiting the earth, he will conduct a number of physics and medical experiments, including trying to get sick in space.

Robert Thirsk, 30, will train with Commander Garneau and serve as backup for the mission.

Commander Garneau said that in addition to the challenge of running a number of scientific experiments on the space flight, he is looking forward to the experience of travelling in space.

"The most fun things for me will be moving around in weightlessness and seeing the earth from space."

At the end of this month, Commander Garneau and the other astronauts will get an orientation tour of the National Aeronautics and Space Administration training school in Houston. He and Mr. Thirsk will take a concentrated training course at the astronaut school this summer.

There are three different sets of Canadian experiments on the shuttle scheduled for launch on October 24. In life sciences, Commander Garneau will test human reflexes and loss of orientation in the weightlessness of space. An important part of the work will be studies of space motion sickness in which Commander Garneau will deliberately try to make himself nauseous. Another set of experiments will use monitoring instruments to measure the electrical fields around the space shuttle as it flies about 300 kilometres above the earth.

A third set of experiments will use television cameras to help the Canadian-designed cargo-handling arm (Canadarm) line up with targets in the shuttle's hold. These findings will be used to develop scientific experiments to be performed on future shuttle missions.

A fourth experiment will measure the state of the El Chicon volcanic cloud in the earth's upper atmosphere.

Lai, director of creative services, said new markets were being fashioned out of China's interest in attracting international trade and through many wealthy Chinese who want to divert their capital to politically stable countries.

Canadian Commercial Corporation (CCC) has awarded a contract amendment valued at \$7.3 million (Cdn.) to Montreal's CAE Electronics Ltd. on behalf of the Federal Republic of Germany for a *Tornado* operational flight and tactical simulator. Since the early 1950s, Germany has purchased simulators from CAE for *UHID*, *CH-53* and *Sea King* helicopters and for the *F-104 Starfighter* and *Alpha Jet* trainer/support aircraft. This particular sale represents the seventh *Tornado* aircraft simulator to be supplied by CAE for the German forces.

Canada's largest radio news service is moving into the satellite era. Broadcast News Ltd. will offer its clients satellite delivery of audio services — packaged newscasts, voice features, voice accounts from reporters and subjects at the scene of stories — by year-end. To listeners, the move will mean an improvement in the quality of out-of-town radio news accounts, now delivered to stations over land-based transmission lines.

Speed skater Gaetan Boucher, whose three-medal performance at the Winter Olympics in Sarajevo made him a Canadian sports hero, has been selected athlete of the month for February by the Sports Federation of Canada. It was Boucher's second consecutive athlete-of-the-month award and his fourth monthly honour, both accomplishments never before achieved by a Canadian. Boucher of St-Hubert, Quebec, won gold medals in the 1 000- and 1 500-metre speed-skating events and a bronze in the 500. He also won the over-all title at the world speed-skating championships in Norway.

If waiting on tables for three shifts a day is not enough for Eileen Munn, she can often be found dancing in a Toronto discotheque. Munn, who works as a waitress in the banquet department of the Sheraton Centre hotel, says she enjoys going to discos and "having a couple of drinks and dancing". And why not? After all, she is only 83. "I love it," she says. "I always dance any place. As soon as the music starts, I just get going. I've always been like that. Maybe that's what keeps me going." Munn, who sometimes does three three-hour shifts a day, admits that is a heavy day for someone half her age, but "that's all right, I don't mind my work. I have no intention of quitting until I die."

Canada Weekly is published by the Public Affairs Branch, 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 Noticiario de Canadá.

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

Canada 

ISSN 0384-2312