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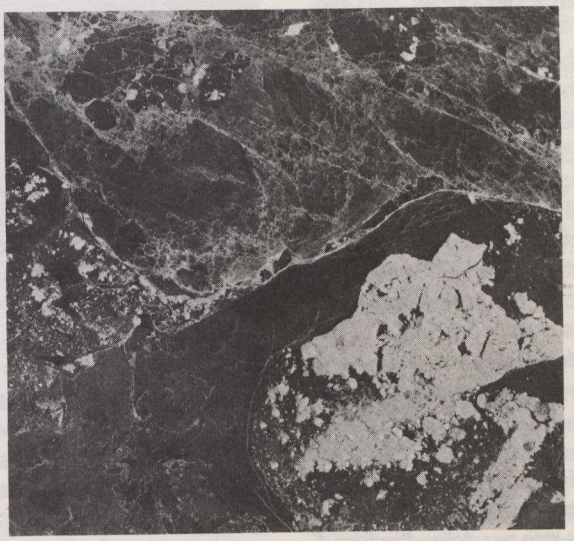
Two stars for successful sensing system

After a highly successful year of commercial application of Star-1, a type of airborne imaging technology, the two Canadian companies that developed it, Intera Technologies Limited of Calgary, Alberta and MacDonald Dettwiler and Associates Limited of Vancouver, British Columbia, have signed a production agreement to produce an improved version of the system, Star-2.

Development of the high resolution remote sensing system, Star-1, by Intera for commercial purposes began in 1977. The system, designed for use in mapping ice conditions to support Arctic offshore exploration and drilling, was based on the best airborne synthetic radar (SAR) available, SAR 580, developed by the Environmental Research Institute of Michigan, and subsequently purchased for testing by the Canada Centre for Remote Sensing for experimentation and analysis. SAR systems are an advanced technology version of Side Looking Airborne Radar (SLAR).



Star-1 synthetic aperture radar image of ice fields in the Beaufort Sea made from more than 9 000 metres above and transmitted to a ground station by digital data downlink shows ice types, small multi-year ice hazzards, pressure ridges, ice breaker tracks and drilling vessels.

MacDonald Dettwiler, an electronics firm with a background in satellite technology, was instrumental in manufacturing the real time processing hardware for Star-1 and has been commissioned to build the radar equipment for Star-2.

The Star system, which stands for Sea-Ice and Terrain Assessment Radar, is one of only two synthetic aperture radar systems in the world available for commercial use, and according to Intera president Brian Bullock, "the other system is technically out of date and configured in a large, expensive to operate aircraft. The exciting thing about Star-1 is that it produces a better product at about half the cost".

Arctic operations

Following six years of research, the Star-1 system was launched in November 1983 in the Beaufort Sea for Canadian Marine Drilling Limited (CANMAR), a subsidiary of Dome Petroleum Limited. Over the past year, Star-1 has operated primarily in the Arctic, performing daily ice surveillance tasks in support of offshore drilling operations and petroleum exploration for clients such as Dome, Gulf, Exxon, ARCO, Amoco, Shell, and others.

Installed in a *Cessna Conquest 441* a lightweight turboprop aircraft, the Star-1 has averaged one, six-hour mission a day and has flown 2 000 hours in its first year of service across the ice covered drilling areas from the operations base in Inuvik, Northwest Territories. The radar equipment scans a 25- to 50-kilometre wide swath of surface, recording the status of the ice.

The on-board recording is *via* full band width high density digital equipment. From the recording equipment, hardcopy images may be processed either by an on board high resolution laser beam system using heat sensitive paper, or by a high resolution wet chemical system based in Inuvik.

During the month of July, only two issues of *Canada Weekly* will be published. They will appear on July 10 and 24.

External Affairs Canada Affaires extérieures Canada

Star-1 image of terrain in the eastern United States shows subtle relief and geologic structure illustrating the advanced resolution and image quality of the system.

Data can be transmitted to the Inuvik ground station from as far out as 350 kilometres with the plane flying at 9 000 metres. This height, combined with the characteristics of the system, means that ice surveillance operations are independent of weather and light conditions.

"This technology has not been possible in commercial systems before," said Mr. Bullock. "The compactness of the system enables it to be used in a lightweight aircraft, thus reducing the operational cost, while improving the quality and utility of the end result," he added.

In its Arctic operations, Star-1 has proven to be a cost effective means of acquiring immediate information on ice and land configurations to support offshore and terrain drilling, engineering, and transportation. Using the measure of real data rate per dollar, the Star-1 out-performs all radar systems currently available by 10 to 100 times said Mr. Bullock.

Further applications

In addition to its work in the Arctic the Star-1 has completed a large terrain survey of 600 000 square kilometres of the eastern United States for the US Geological Survey and some classified research for the United States military.

Star-1 is currently in southeast Asia collecting imagery for geological maps over the continually cloud-covered areas of Papua, New Guinea and Indonesia. This deployment is part of an off season world tour to demonstrate the system for hardware sales and collect data for survey contracts.

In addition, demonstrations are underway or in planning stages in Scandinavia for ice, in Europe for geology, land use and research, and in India, Australia and several other countries for research and mapping. Possible uses include monitoring forest cutting in cloud-covered countries, patrolling shipping, border monitoring, geographic surveys and coastal surveillance of fishing fleets. The system also has applications for monitoring oil spills, terrain mapping, oceanographic reseach and is a potential data source for sea ice forecast models.

Advances for Star-2

Star-2 will incorporate the features of Star-1 with a number of additions and improvements.

The processing speed and transmitting power will be increased resulting in 110 per cent more productivity per flight hour. There will be a 40 per cent increase in the ground swath covered by a single flight pass and a 50 per cent increase in the speed of data acquisition.

A digital data display and recording system will be added to increase the use, storage and retrieval possibilities of the data. The data can then be more easily distributed to users and overlaid with information such as position co-ordinates, bathymetry for marine traffic, ice forecasts for offshore drilling operations, and satellite imagery for terrain mapping applications.

Other additions for the Star-2 will be single point computerized control, automatic position annotation, three axis stabilization of the antenna and smaller physical size and weight.

Ratification of convention to transfer offenders

Canada has ratified the European Convention on the Transfer of Sentenced Persons, signed at Strasbourg, France, headquarters of the Council of Europe, on March 21, 1983. The convention will enter into force on July 1, 1985, and will be binding on Canada from September 1, 1985.

Canada is not a member of the Council of Europe and this marks the first time it has endorsed a convention developed by the Council. Drawing on Canada's experience in the transfer of offenders, Canadian experts were instrumental in the drafting of the convention.

Under the convention, Canadians imprisoned in countries which are party to it, will be allowed to serve the remainder of their sentences in Canada. The transfer of sentenced persons will take place only at their request and after all rights of appeal have been exhausted in the sentencing country. Also, all transfers will be subject to approval of both the countries involved.

This is Canada's seventh treaty on the transfer of offenders: bilateral agreements are in force with France, Mexico, Peru, and the United States, while those with Bolivia and Thailand await ratification.

In addition to Canada, five countries — France, Spain, Sweden, Britain, and the United States — have ratified the convention. Other states among the 21 members of the Council of Europe are expected to become parties to it.

Acid rain detection

Environment Canada is setting up an early-warning system, claimed to be the first of its kind, which will detect acid rain across Canada.

The Acid Rain National Early Warning (ARNEW) system is a coast-to-coast network of 110 forest plots set up in strategic zones with varying degrees of acid deposits. Each plot contains 75 trees from six species, various soils and drainage, as well as different geography and climate.

The ministry says 25 plots in the Maritimes, 13 in Ontario and three in British Columbia are in operation. The rest will be in place by the end of this year.

Edward Kondo, director of the ministry's forest insect and disease survey said that damage detected by his staff will be published by Environment Canada and remedial action will be taken after determining its cause and extent.

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Visit by USSR official expands bilateral relations

Secretary of State for External Affairs Joe Clark and Prime Minister Brian Mulroney met with Vitaly Vorotnikov, a member of the Politburo of the Communist Party of the Union of Soviet Socialist Republics and chairman of the Council of Ministers of the Russian Soviet Federated Socialist Republic, during his seven-day visit to Canada. Mr. Vorotnikov was in Ottawa, May 26 to 29, to continue the dialogue between Canadian and Soviet leaders on important international and bilateral topics. He then travelled to Alberta at the invitation of Premier Peter Lougheed.

Welcoming Mr. Vorotnikov to Canada, Mr. Clark said that the visit was "the latest step in efforts to develop our bilateral relations". He also expressed the hope that meeting each other would "contribute to a better understanding of each other's positions, aims and motives, at this juncture in East/West relations".

Mr. Clark added that it was necessary to "bring wider circles of decision makers, opinion formers and experts in touch with each other" in order to expand relations between Canada and the USSR.

Peter Bregg

(From left) *Secretary of State for External Affairs Joe Clark, USSR Politburo Member Vitaly Vorotnikov and Prime Minister Brian Mulroney meet in Ottawa during Mr. Vorotnikov's visit.*

After a meeting with the prime minister, Mr. Clark said that Mr. Mulroney "made the point that we are neighbours to both superpowers and while we are unquestionably a member of one alliance, we intend to develop our relations with both".

Trade important

One of the central issues discussed was trade and the secretary of state for external affairs pointed out that it was an important issue as the USSR is Canada's fourth largest trading partner. He recognized that "the structure of our trade needs attention" suggesting that "we must, while continuing to develop our important trade in commodities, move ahead in the manufacturing sector and in the modern technologies of industry and agriculture".

Other issues included expanding agricultural, scientific, technical, Arctic, cultural and artistic co-operation. Mr. Clark also elicited a promise from Mr. Vorotnikov that Soviet and Canadian officials will review information on requests by Soviet citizens to be reunited with family members.

Mr. Clark said Mr. Mulroney accepted "in principle" an invitation from Soviet leader Mikhail Gorbachev to visit the Soviet Union at some time during his first term as prime minister. Details remain to be worked out.

Last March, Mr. Mulroney attended the funeral of Mr. Gorbachev's predecessor, Konstantin Chernenko, and met the new Soviet leader briefly. Mr. Clark visited the USSR in April to expand relations between the two countries (see *Canada Weekly*, May 1, 1985).

Canada's major role in international science and technology

Dr. Larkin Kerwin, president of the National Research Council and Canada's representative on the Working Group on Technology, Growth and Employment, has indicated that Canada is playing an important role in a number of science and technology projects of the group.

The working group, which reported to the leaders at the Bonn Economic Summit in May, was set up by the summit leaders at their meeting in Versailles in June 1982. It includes representatives from Canada, the Federal Republic of Germany, France, Italy, Japan, the United Kingdom, the United States and the European Economic Community.

First in aquaculture

Canada leads the team on aquaculture which has conducted workshops on salmon and shellfish production, and is preparing a report on existing world use of the technology, research efforts and funding for collaborative efforts in the area. The group has identified the need for scientific structures in the field aimed at increasing and optimizing the harvests by maritime industries.

Canada is a co-leader with France of another team studying new technologies as they are applied to culture, education and vocational training. In the field of computer-aided learning, France and Canada have committed themselves to establishing national data banks of information on educational technology. Studies are being conducted on the possible use of "intelligent" video disks in technology training.

Some 18 projects were established by the working group. Those studies in which Canadians have participated actively include: remote sensing from space; advanced robotics; public acceptance of new technologies; biotechnology; advanced materials and standards; controlled thermonuclear fusion; food technology; basic biology; high energy physics; and solar system exploration.

Environmental concerns

Canada also played a major role in the 1984 working group report on the environment dealing with atmospheric pollution, toxic and radioactive wastes, marine pollution, pollution of soils and waters, land husbandry and climatic change. The federal Department of the Environment was represented on the group which prepared the report emphasizing that economic and environmental policies can be brought closer together through science and technology.

The working group reported in Bonn that the attention the summit had paid to technology issues has stimulated international co-operation and increased the realization among summit countries and others that research and technology are a driving force for increasing industrial performance.

The curtain rises on Canada Day celebrations

Many Canadians attend outdoor ceremonies celebrating the country's birthday.

Imagine a theatre with a stage 5 000 kilometers wide and crowded with thousands, even millions of actors and actresses celebrating together and singing the same songs. Every year on Canada Day, July 1, Canada becomes just such a theatre as Canadians participate in a nation-wide extravaganza in celebration of the country's birthday.

Canada is celebrating its one hundred and eighteenth birthday this year and throughout the day, Canadians of every age in all parts of the country will take part in the festivities.

Canada was born with the union of four of Britain's North American colonies — Ontario, Quebec, New Brunswick and Nova Scotia — in 1867. And on July 1, celebrations were held across the country.

In the cities they began at midnight with the pealing of church bells; in the country bonfires were lit and serenaders paraded, singing anthems. In military centres there were 21-gun salutes to the Union Jack at dawn. And in Toronto, an immense ox was roasted on a main street to provide food for the poor. Celebrations continued throughout the day with speeches, prayer meetings, concerts and fireworks.

Over the first 50 years, the holiday was observed, but in most years the country was too busy with survival and growth to allow much energy for festive celebrating of the past. Very quickly the nation was widened with the entrance into the union of three more colonies — Manitoba (1870), British Columbia (1871) and Prince Edward Island (1873).

Continued growth, including the addition of the prairie provinces of Alberta and Saskatchewan in 1905, contributed to a general desire for a large celebration in 1917, on the country's fiftieth birthday. Prime Minister Wilfrid Laurier observed that the anniversary should see "jubilation prelent in every corner of the land, with the exuberance of overflowing hearts". As Canada was at war, however, in place of the anticipated scenes of gaiety, there were quiet hours of sermons, speeches and prayers.

In 1927, with peace and prosperity, Canada's sixtieth anniversary was celebrated with unprecedented colour and vitality. In Ottawa, some 50 000 people gathered on Parliament Hill for national ceremonies. There they heard messages from the prime minister and the governor general, as well as a carillon concert, the first from the new bells installed in the Peace Tower above the Parliament buildings. Equally important, the messages and concert were also heard by millions of other Canadians in distant parts of the country owing to the recent invention of radio.

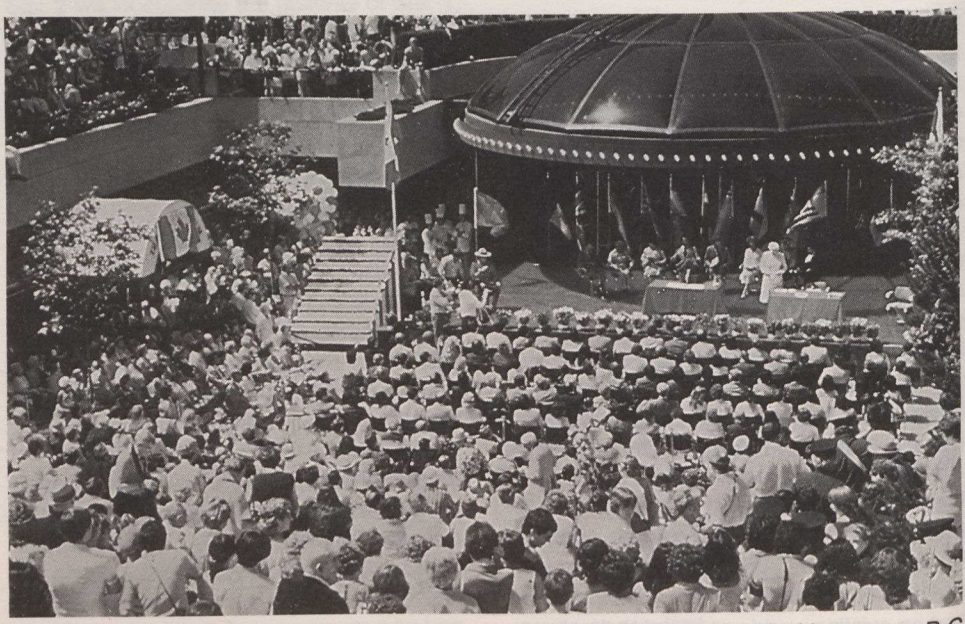
Over the next four decades the holiday continued and minor tributes were paid to the birthday, but for most Canadians the day was what it had normally been for generations: a time for private pleasure rather than general celebration.

Centennial brought change

The year 1967 changed the manner of celebration. Marking the country's centennial, some 100 000 spectators crowded onto Parliament Hill for a full day of elaborate entertainment and displays. Attendance at events in other cities, towns and villages across the land was just as large and enthusiastic. Also with the medium of television, separate ceremonies were presented to a national audience in broadcasts from 13 centres, ranging from Newfoundland to British Columbia.

And the celebrations of July 1, 1967 did not end with the last fireworks at midnight. Many long-term projects, including civic centres, sports halls, schools, libraries and parks, were begun as part of the centennial celebrations.

In 1977, Canada Day took on a new egalitarian look as the government began to encourage and co-ordinate ideas from individuals and private groups across the country. Inventiveness and innovation flourished. The dances and bonfires and fireworks central to earlier festivities were continued, but now they were augmented with cultural exchanges, historical pageants and other enriching activities. These activities remain the heart of the birthday celebrations today.



Secretary of State photos

Canada Day programs include citizenship ceremonies like this one held in Vancouver, B.C.

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Optical discs for micros

Geac Computer Corporation Limited of Markham, Ontario, has developed one of the first optical storage interfaces for microcomputers. It allows personal computers to store and retrieve data from optical discs capable of storing more information than a large mainframe computer.

Doug Brooks, manager of optical disc systems at Geac, said that "because it is a low cost, simple system, it will also allow businesses to experiment with optical disc technology".

Called the Gig-Attach, the device consists of a small circuit board that attaches to a single personal computer. It contains the special software needed for a personal computer to emulate a terminal with MS-DOS operating software to access the optical disc storage unit. A single optical disc linked to the network can store up to two gigabytes (two billion bytes) of data.

Only one unit needs to be installed because it acts as a gateway, allowing all personal computers on a business local area network to be hooked up to it. Each unit retails for about $1 195.

Doug Brooks said the company has already sold a number of units. Thomson-CSF SA of France, is marketing the unit in Europe.

Geac, a manufacturer of mainframe computers for multiple transactions that require large storage systems, plans to develop a family of Gig-Attach products to work on a variety of personal computers. The first one is compatible with the PC/XT manufactured by International Business Machines Corp. of Armonk, N.Y. Geac is also developing an interface for Unix operating systems that will allow any user of the popular software to use optical disc storage.

Software for French library

Recently, the French National Library in Paris selected Geac's sophisticated cataloguing software to computer catalogue its collection of more than 60 million documents and books.

The Geac system was chosen over competition from other international and French companies. For a number of months, Geac representatives and library officials worked out the details of a custom-made cataloguing system that would incorporate the library's unique filing system with a sophisticated retrieval information system. As part of the arrangement, Geac agreed to assemble its terminals and distribute its software in conjunction with Metra-Sema, a major French systems house.

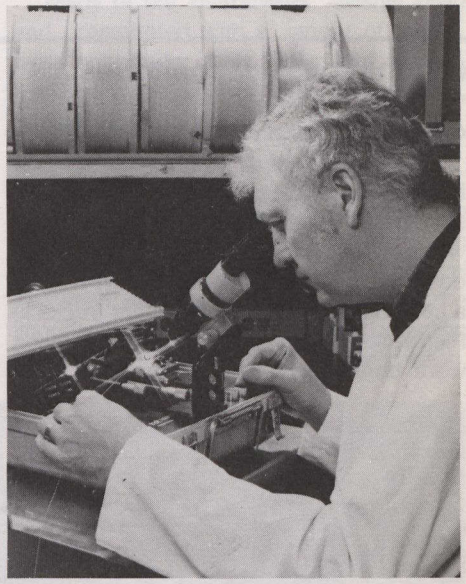
"To make inroads in the French marketplace, we knew we had to become essentially a French company," said David Botten, Geac's director for southern Europe.

The company has already placed 35 terminals in the library, and its cataloguing system has organized about 200 000 titles. And according to Mr. Botten, plans are under way to expand the system in the next few months. Geac has also concluded a deal to create the library system for the Lavillette, Paris's new science park.

Prior to setting up the cataloguing system for the French National Library, Geac had successfully placed similar systems in libraries in Britain, West Germany, the Netherlands, Italy and Belgium.

Fibre optic fusion

A team of Bell-Northern Research (BNR) researchers has developed a new advanced fibre optic fusion splicing set that can join two pieces of the hair-thin optical fibres with precision.



Gary Edwards, a technologist with Bell-Northern Research, splices two pieces of optical fibres using the new splicing set.

The fusion splicing set was designed for use with single mode fibre that can carry more information at greater speed than multimode optical fibre, which has been in use for about ten years.

In the splicing process, a short burst of heat is produced by an electric arc located near the microscope's base which melts and fuses the optical fibres.

The fusion set folds into a compact, self-contained unit — a little larger than a briefcase. It was designed to be carried easily into manholes, onto aerial platforms, and to other field locations where optical fibre cables, used in advanced telecommunications systems, are spliced. It is being manufactured and marketed by Northern Telecom Canada Limited.

Fibre optic telecommunications systems use a light source, such as a laser, which is turned on and off several hundred million times a second, to transmit voice, data, or image communications signals through glass fibres.

Food from the desert

Agrodev Canada Inc., a subsidiary of Envirocan Limited of Vancouver, British Columbia, is successfully applying Canadian agricultural technology in developing farms in near-desert conditions, in an effort to provide long-term solutions to the food shortages in Africa.

A 10 000-acre farm created at Sim Sim in Sudan has been in production since 1982 and is the first modern mechanized farm in the region. Using Canadian equipment and techniques, Agrodev seeded 3 700 acres the first year and 9 000 acres the second, obtaining yields two to three times higher than neighbouring farms that employed other methods.

"Early results suggest that techniques of the Canadian prairies, blended with local experience and conditions, may well lead to significant advances in Sudanese mechanized agriculture," said Ken Lucas, president of Agrodev Canada. He added that there are many opportunities for investors to establish permanent farms in the Sudan. "The area covers 60 million acres and we expect this farm will be the first of several built around a service centre," he said.

Mr. Lucas also said there are good possibilities for Canadian agricultural technology in Third World countries. Agrodev has exported Canadian agricultural technology to more than 25 countries since it was established in 1976.

According to a recent United Nations Food and Agricultural Organization forecast, the annual requirements for external aid to agriculture in developing countries will reach $12.5 billion (US) by 1990. Estimates are that annual investments in primary agriculture in developing countries will reach $93 billion by the year 2000, or $132 billion if storage, transportation and marketing are included.

The project in Sudan is being carried out for the Canadian International Development Agency. Under its arrangement with commodity broker Gulf International, Agrodev has been able to convert sorghum into cash or trade it for fuel. Agrodev is also developing a farm in Madagascar for Gulf International that will export its entire production.

Virus-free potatoes produced in Pemberton

Pemberton, British Columbia, western North America's major source of virus-free potato stocks, is virtually the only source of virus-free seed on the continent. Pemberton seed potatoes, considered the highest quality, are a million-dollar industry.

"Pemberton is the mecca of the seed potato industry," said Bud Wright, potato specialist and head plant pathologist at the Agriculture Canada Vancouver Research Station. "We think we have some pretty fascinating facilities and work going on here, and we know that it's getting international attention," he said.

When designated 'virus-free' it means the tubers are almost totally free of harmful pathogenic viruses. "That means they're of the highest possible quality and, to the producer, it also means a much higher crop yield," said Dr. Wright.

The Pemberton valley, surrounded by mountains and wilderness, is considered an ideal location for developing virus-free crops. Its natural isolation prevents contamination from outside sources.

In 1967, provincial legislation required all potatoes planted in the area to be grown from seed produced in the area. The regulations outlined the varieties that could be grown, sanitary practices and crop rotation.

Agriculture Canada's Vancouver Research Station scientists and the Pemberton seed potato growers maintain the virus-free quality seed potatoes through new virus eradication techniques that include heat therapy and meristem culturing. They are complemented by strict planting and management practices on the part of the farmers.

Today, there are 18 seed potato growers in Pemberton with virus-free operations. This amounts to about 200 hectares of seed potatoes, averaging about 37 000 plants to the hectare and yielding about 30 tonnes of seed potatoes per hectare. Producers receive about $225 per tonne.

Pemberton seed potatoes are sold mostly to US producers in Idaho, Oregon and Washington and to Canadian producers in Alberta, Manitoba and British Columbia.

International contacts

Dr. Wright and his colleagues are increasingly being contacted by other countries interested in producing their own virus-free seed potatoes.

"This is because virus-free seed will yield somewhere in the order of 20 to 30 per cent above non virus-free potato crops," said Dr. Wright.

Pim Sanderson, a New Zealand plant pathologist who visited Pemberton, said they are now "in the process of developing a similar potato scheme" in New Zealand. Lorie Ewing, a researcher developing a nuclear seed potato program in Moscow, Idaho, has also toured the Pemberton valley. He said it was important to see the procedures that are carried out in Pemberton and how they can be applied to the state of Idaho.

Memorabilia of Papal visit donated to national depositories

The Canadian Conference of Catholic Bishops has donated the records from the Secretariat created to organize Pope John Paul II's visit to Canada in September 1984 to the Public Archives of Canada (PAC) and one of the two "popemobile" trucks built specifically for the Pope's use on his Canadian tour to the National Museum of Science and Technology (NMST).

As the headquarters for the Papal visit to Canada, the Secretariat acted as the liaison between dioceses, governments and the Vatican. Included in the documents transferred to the PAC were correspondence, draft travel itineraries and speeches for the Pope, as well as official speeches and programs. A complete copy of televised video tapes, posters and various maps and plans were also donated.

Other documents still being used by the conference, like financial records, will be transferred to the PAC at a later date.

Victorin Chabot, chief of the French Archives Section and responsible for documents pertaining to the Catholic Church, said that "from a research point of view these records are an important addition to the Public Archives, as they document a major event in twentieth-century history of the Canadian Catholic Church".

The popemobile was donated to the NMST as the conference "wanted one of the popemobiles preserved in Canada", said museum spokesman Ernie DeCoste. The other vehicle is expected to be sent to Rome.

The white pick-up trucks, topped with bullet-proof, glassed-in domes, were designed to protect Pope John Paul from poor weather and possible assassins. They were designed and built by Pierre Thibault Trucks, a company that manufactures fire trucks in Pierreville, Quebec. Components and funds were donated by several Canadian companies and organizations and the Quebec government. The total cost of each truck was $130 000.

The agreement with the museum states that "the popemobile will not be used for the transportation of other dignitaries and will be reserved for the Pope, should the occasion arise". The museum will preserve the popemobile and display it in the section reserved for antique vehicles. They will also attempt to display it across Canada.

Photo Features Ltd.

One of two popemobiles used during Pope John Paul's visit to Canada in September 1984 was donated to the National Museum of Science and Technology.

News of the arts

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New gallery at ROM displays musical instruments

The Royal Ontario Museum (ROM) in Toronto, Ontario has opened a new musical instruments gallery to display its outstanding collection of historical musical instruments.

ROM photos

Double bass from Italy, c. 1600, attributed to Casparo Bertolotti da Salo.

The *European Musical Instrument Gallery: 1500-1900* was developed by ROM curator, Ladislav Cselenyi.

The collection, one of the most extensive in Canada, includes more than 120 instruments, mainly of European origin and dated from the late sixteenth to the late nineteenth century. The display is complemented by music books, sheet music, manuscripts and works depicting the musical life of the past. An additional feature is an audio system providing visitors with brief musical excerpts and a self-guided tour of the gallery in English or French.

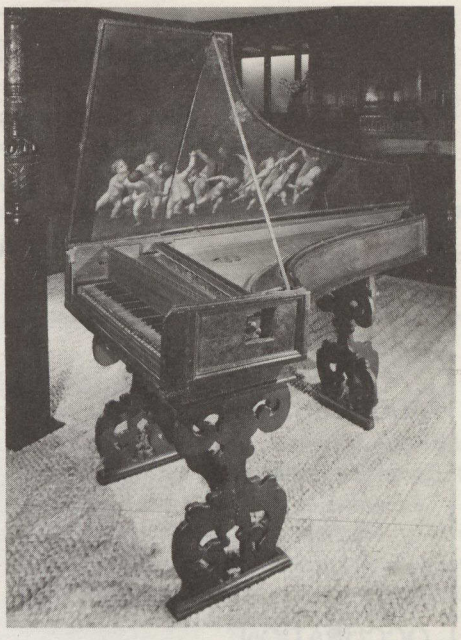
Separate groups

The instruments in the new gallery are arranged by family such as bowed strings, woodwinds, brass winds or keyboards. While some are incomplete, they have been included to demonstrate the essential characteristics of their type.

Many of the instruments, lavishly inlaid and ornamented with a variety of motifs, were chosen for their design and decorative quality as well as their development, character and use.

Important gift

Central to the ROM collection is the gift to the museum more than 70 years ago by one of Canada's foremost families of the musical instrument industry, R.S. Williams. Among the important objects from the Williams collection on view are the Celestini harpsichord (Italian, sixteenth century); the Dragonetti double bass (Italian, c. 1600); and the Zumpe square piano (English, eighteenth century).



Italian harpsichord is inscribed by Johannis Celestini Veneto, MCXCVI (1596).

One of the most elegant objects is an eighteenth century mandora. Of Italian craftsmanship, this mandora was illustrated on a Canadian stamp issued in 1981 to commemorate "The Look of Music", an international exhibition held in Vancouver.

The gallery also features some recent acquisitions including an English ivory flute dated 1818; a Portuguese guitar, c. 1900; and a melodeon manufactured in Toronto in 1865 by R.S. Williams.

Rare bibles donated to the National Library of Canada

The National Library of Canada has acquired a second portion of the Hebraica and Judaica collection of the Montreal bibliophile Jacob M. Lowy. The first part of the collection was donated in 1977.

Collected over nearly half a century, the Lowy collection was considered one of the outstanding private collections of Hebrew incunabula and rare printed books in the Western world.

The new acquisition contains 700 volumes of rare printed Hebraica, manuscripts and facsimile editions, and bibliographic literature. Rare books in the collection include five incunables, with two bibles in Latin and one of the earliest Hebrew printed books, a bible printed in Mantua in 1474. The National Library now holds over 50 volumes of incunabula, including 26 titles in Hebrew and 20 titles in Latin.

Other rarities are 150 volumes printed before 1800, among them early bibles in Hebrew, Aramaic, Greek, and Latin, some polyglots, and the first edition of the Anglo-Saxon translation made by Aelfric. There is also a group of bible texts in the Inuit and Indian languages of Canada.

The collection encompasses all areas of Hebrew literature, from the bible, talmud, and legal codes to philosophy, the sciences, historical writings, and mysticism. Among the liturgical works are a variety of Passover *haggadahs,* some in Yiddish, Ladino, and Judeo-Arabic.

Over 100 places of printing are represented in the collection including a large group of Leghorn imprints, many books from Austro-Hungary and a selection of printing from North Africa and the Orient. There is also an edition of the Chinese Hebrew bible, the work of Christian missionaries, printed on rice paper in Shanghai in 1851.

Charlottetown festival opens

The 1985 season of the Charlottetown Festival began on June 20 with the world première of Alan and Blanche Lund's *Swing.* The annual Prince Edward Island festival runs until September 14.

The musical *Swing* takes one on a sentimental journey in a tribute to the big band songs and sounds of the 1930s and 1940s.

The family classic, *Anne of Green Gables,* is being presented for its twenty-first season. Filled with merriment, music and magic, *Anne of Green Gables* is one of Canada's most famous and best-loved musicals.

The third main stage presentation of the festival is *Fauntleroy.* With music and lyrics by Johnny Burke, it tells the story of a young street-wise New Yorker who inherits a life of titled royalty.

The cabaret performance is entitled *Sleeping Arrangements* and the major children's presentation is *Hansel and Gretel.*

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News briefs

Thermon Canada Limited of Montreal, Quebec, has developed engineering software that calculates the thermal requirements of metallic piping systems for frost protection, temperature maintenance or heating up. The package is organized to enable a user to design systems for mineral insulated, constant power density or self-regulating electric systems. It runs on the IBM PC and IBM compatibles.

The Export Development Corporation has announced the signing of a $102 000 (US) financing agreement to support a sale to Mexico by Trench Electric, a division of Guthrie Canadian Investments Limited of Scarborough, Ontario. The sale involves the supply of 74 high-voltage line traps to Comision Federal de Electricidad of Mexico.

Novatel Communications Limited of Calgary, Alberta has announced a $3.5-million sale of mobile telephone units to Carphone Group of Bath, England. A Novatel spokesman said the British sale is one of the largest orders among 12 major deals signed since the company was formed in late 1972. Novatel will be the prime supplier of mobile telephone units to the Carphone Group and the sale includes both the units and spare parts.

I.P. Sharp Associates of Toronto, Ontario have announced a new Business Information Wire from Canadian Press (CPNEWS) that is available online. Each business day, Canadian Press, Reuters, The Associated Press and Agence France-Presse supply more than 200 stories covering major national and international events, as they happen. Canadian Press selects and arranges the news into 18 story categories continually throughout the day. With CPNEWS, educators, government staff, business professionals and others can receive this up-to-the-minute news without waiting for newspaper.

Linda Ryan-Nye and Pat Hacker, both of Toronto, are in the process of completing a new computer network to link women across the country and around the globe. They hope to have the system fully operational by the beginning of August.

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