

Canada Reports

Ottawa
Canada

Volume 2, No. 12
June 25, 1986



1986 World Exposition -
Vancouver, BC
May 2 - October 13

- Triple export award winner, 1
- International trade minister in East Asia, 2
- Canada at UN special session on Africa, 3
- Minister visits Ireland and the Philippines, 3
- Solar power "lights" up, 3
- Her eyes may write volumes, 4
- White-water rafters raise river economy, 4
- Satellite station for SPOT, 4
- Separating gases through membranes, 5
- Glassblower honoured, 5
- Agreement on Niagara River clean-up, 6
- Coin program for Calgary winter games, 6
- Flexi-fuel vehicle tests, 6
- Toronto orchestra in Europe, 7
- Dutch masterworks mark Vancouver's centennial, 7
- Canadian tour for ancient Peruvian ceramics, 7
- Trade update, 8
- Machines provide cash at new outlets, 8
- News briefs, 8

Canada Reports will not be published in the summer. The next issue will appear in the fall in colour as a monthly.

External Information Services Division



External Affairs Affaires extérieures
Canada Canada

Triple export award winner

Process Technology Limited of Oromocto, New Brunswick, a manufacturer of semiconductor products and processing equipment, won three national awards in 1985 and was Canada's top export award winner for the year.

The prizes were a Canada Export Award, the country's highest export distinction (see *Canada Reports*, November 6, 1985), and two Canada Awards for Excellence, a gold for entrepreneurship and a silver for marketing.

Process Technology was the only company to receive two excellence awards. The prizes, which are presented annually, are for outstanding achievement in nine categories: productivity, entrepreneurship, marketing, labour/management co-operation, invention, technology transfer, innovation, engineering design and industrial design.

Rapid growth

Process Technology's export sales have skyrocketed since the company was founded in 1982. Revenues from sales, which amounted to \$634 000 during the first year, increased to \$7.4 million by the third year.

Exports represent some 95 per cent of the firm's sales volume and include sales to most of the major semiconductor manufacturers such as Motorola, Intel, National Semiconductor, Signetics, Bendix, Mitel, Perkin Elmer, Monsanto, IBM, Bell Labs, Fairchild, Xerox, Ford Aerospace, Northern Telecom, and AT&T. In addition to sales throughout the United States and Europe, deposition systems have been sold to customers in Japan and Israel.

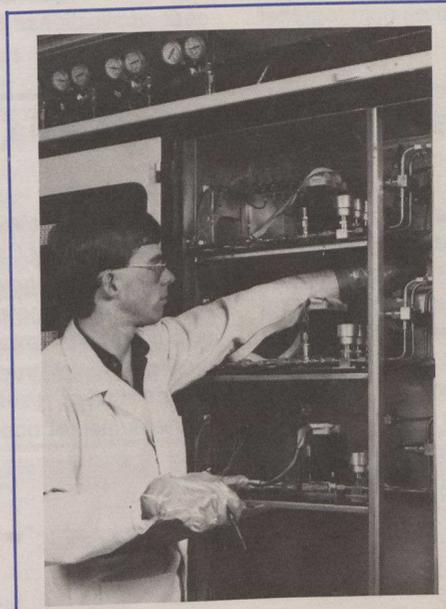
To develop a "high-tech" business in a remote section of New Brunswick, a highly detailed marketing plan was organized at the outset. A vice president in charge of marketing was hired to provide the technical knowledge essential for sales, which were targeted to major semiconductor manufacturers rather than minor users of process equipment. Further, to provide rapid service for product delivery, an aircraft was purchased to connect with US airlines and their major markets.

The company also has marketing representatives in several countries, including five serving the US market, one in Britain, one in the Netherlands and one in Japan.

Innovation

All products manufactured by Process Technology are new entries to the Canadian export and domestic markets.

The company's initial licence from Bell Northern Research was to manufacture a superior low-pressure chemical vapour deposition (LPCVD) system for depositing thin films on silicon wafers



Process Technology Limited employee examines gas panels in a low-pressure chemical vapour deposition system.

that had been developed by George Jenkins, founder of Process Technology, while employed with Bell Northern and Northern Telecom. The generation of layers on silicon and gallium arsenide wafers is essential in the fabrication of integrated circuits.

Process Technology Limited developed the first commercially viable boron nitride process in the world. This system is now used to manufacture X-ray masks.

The company also pioneered processes to reliably deposit thin films on 125-millimetre and 150-millimetre wafers, and has suc-

cessfully marketed the equipment for these processes. Wafer service for 200-millimetre wafers is also being offered.

This work requires the continual modification of quartzware systems to provide efficient delivery of reactant gases to the wafer surface. Research and development work is also proceeding on the gas panels and control systems to improve delivery of gases to the process tube. Much of this work has led to improvements already incorporated in the firm's marketed systems.

In 1983, Process Technology also developed a robotic wafer loading system with soft-landing capability. This system is now in commercial production.

The company's high-technology semiconductor products and processing equipment are considered to be among the best in the world. They include low-pressure and atmospheric gas panels; source cabinets; gas cabinets; specialized quartzware for use in LPCVD systems; complete systems for the deposition of thin films on silicon wafers; and silicon wafers pre-coated with thin films.

All the elements in the product line are interrelated and are often sold together



George Jenkins (left) receives Canada Award for Excellence from Minister of State (Small Business) André Bissonette.

as a total system. Systems and processes are also custom designed for special process applications.

International trade minister in East Asia

Minister for International Trade James Kelleher visited Japan, Korea and China, May 27 to June 6, to enhance trade and investment objectives in Asia-Pacific as outlined in Canada's National Trade Strategy, and to expand ties developed by Prime Minister Brian Mulroney during his recent visit to the region. (See *Canada Reports*, June 11, 1986.)

Mr. Kelleher's visits to Japan and China

highlighted the recent establishment of Canadian consulates general in Osaka and Shanghai as major Canadian trade initiatives. In meetings with government and business leaders, he promoted technology transfer and investment missions, Canadian participation in infrastructure projects, and improved market research on Japanese and Chinese market opportunities.



Mr. Kelleher (right) and Yoshio Takeuchi, the president of the new Kansai International Airport Company, discuss possible Canadian contracts for the airport development project in Japan.

In Japan, Mr. Kelleher said he will encourage Canadian businesses to get involved in the Kansai International Airport development project which involves the building of an airport on a man-made island and a four-kilometre road and rail access bridge. "Canada's reputation for building and operating airport facilities equipped to handle a multitude of variable weather and operating conditions is world renowned," he said.

In his meetings with the mayor of Osaka, Mr. Oshima, civic officials, and members of the Osaka Chamber of Commerce, Mr. Kelleher emphasized Canada's commitment to promote trade, technology transfer and investment with Japan. He also welcomed the Chamber's expressed interest in a major investment mission to Canada in 1987.

Trade meeting

At the World Trade Ministers' Meeting in Seoul, Korea, May 30 — June 1, Mr. Kelleher said the representatives from the 18 countries in attendance, "demonstrated a determination to move into a new round of trade liberalization negotiations". He especially noted strong and growing support from most participants for substantive and urgent action to deal with agriculture.

The minister took the lead in following up on the prime minister's initiative at the Tokyo Summit to urge participants to declare that in the new round of multilateral trade negotiations to be launched in Punta del Este in September, agriculture be put as a top priority both in timing and importance.

Mr. Kelleher also held bilateral meetings with other trade ministers including Mr. Clayton Yeutter of the United States, Mr. De Clercq of the European Community and Mr. Hernandez of Mexico.

Hydro development

In Beijing, China, Mr. Kelleher met with Vice Premier Yao Yilin and his senior ministers responsible for hydro and thermal power development. Madame Qian confirmed China's acceptance of a Canadian company, CIPM, to carry out the feasibility study for the Three Gorges hydro project. This project, estimated to cost up to \$30 billion, will be the largest hydro project ever undertaken.

The importance of bilateral trade was highlighted in discussions with China's trade minister, Zheng Tuobin. Mr. Kelleher offered to provide a team of experts to work with the Chinese on their resumption of membership in the General Agreement on Tariffs and Trade.

Mr. Kelleher also announced that Canada will provide a \$5-million fund through the Canadian International Development Agency to help Canadian firms do feasibility studies on technical projects in China over the next three years.

Denis Drever

Canada at UN special session on Africa

Minister for External Relations Monique Vézina led the Canadian delegation to the special session of the United Nations General Assembly on the economic crisis in Africa, held in New York, May 27 to 31. This special meeting was convened by the General Assembly in response to a request made by the heads of state of the Organization for African Unity at their July 1985 meeting in Addis Ababa.



Mrs. Vézina addresses the UN special session on Africa.

In a speech to the special session on May 27, Mrs. Vézina announced a moratorium on official development assistance debt for African countries and a mechanism to make funds and technical expertise available to African communities.

The measures are in addition to the Africa 2000 initiative, a comprehensive series of steps the Canadian government will take to respond to the needs of African countries over the next 15 years, that was announced on May 6. (See *Canada Reports*, May 28, 1986.)

The moratorium is for an initial period of five years but Mrs. Vézina said this can be

extended in five-year segments to the year 2000. Debt from outstanding development assistance loans owed to Canada by sub-Saharan countries totals \$700 million and would involve a burden of \$250 million in repayments over the next 15 years.

The second measure is a proposal to create a new mechanism within the multilateral aid system. "Its role would be to make available to local communities, village councils and volunteer organizations in Africa, funds and technical expertise to help them to carry out projects of their own choosing to meet their needs in the fields of desertification, conservation of ground cover, and

food production," said Mrs. Vézina.

The United Nations Development Program has indicated its support in developing the details of such a facility for Africa. Once the new mechanism has been created, Mrs. Vézina said Canada is prepared to contribute \$20 million over five years.

In New York Mrs. Vézina held more than 17 bilateral meetings with African heads of delegation from various African countries. She also met with representatives of the African and Canadian non-governmental community who were at the UN special session as observers.

Canada-Zaire meeting

Following the UN special session, from June 2 to 4, the third session of the Canada-Zaire Bilateral Commission was held in Ottawa. The main outlines for the program of economic co-operation, economic interchange and trade between the two countries, as well as international questions were discussed.

At the conclusion of the meeting Mrs. Vézina announced the signing of a \$4.6-million agreement between Canada and Zaire, to develop agriculture in the Beni and Lubero territories in North-Kivu, a northeastern region of Zaire. Under the five-year project, financed by the Canadian International Development Agency, a supply and a wholesale marketing centre will be constructed and staff will be trained to operate the centre. A Canadian firm will provide the services and equipment necessary to construct and manage the centre, and will also be responsible for the training program.

Minister visits Ireland and the Philippines

Secretary of State for External Affairs Joe Clark is in the Philippines attending an annual ASEAN Post Ministerial Conference, being held in Manila from

June 26 to 28. Participants at the meeting include the foreign ministers of the six members of ASEAN (Brunei, Malaysia, Indonesia, Singapore, Thailand and the Philippines), as well as the foreign ministers of ASEAN's dialogue



Joe Clark

country partners (Canada, the United States, Australia, New Zealand, Japan, and the European Community).

During the conference, the Canadian minister will have bilateral meetings with the

prime minister of New Zealand and the foreign ministers of Australia, Indonesia, Singapore, Thailand and the United States.

Following the ASEAN conference, Mr. Clark will make a bilateral visit to the Philippines from June 28 to July 2. He will meet with senior members of the Philippines government, including President Corazon Aquino and Vice-President and Minister of Foreign Affairs Salvador H. Laurel. He will also visit the island of Negros to view Canadian development projects.

Prior to his trip to the Philippines, Mr. Clark visited Ireland from June 20 to 23 where he participated in the dedication ceremony of the memorial to the victims of the Air India Flight 182 tragedy of last June 23. The monument was built by the governments of Canada, India and Ireland. Mr. Clark also met with Ireland's prime minister and foreign minister.

Solar power "lights" up

Canada's first commercial solar lighting system, opened on June 4 at the Victoria Park Place office complex in North York, Toronto. The occupants, Canadian Telecommunications Group, are now working under natural lighting channelled through specially designed "light" pipes that permit sunlight to enter and illuminate most of the office space.

The solar lighting system, patented as the Prism Light Guide, was developed by TIR System of Vancouver. The project was funded in part by Energy, Mines and Resources (EMR) Canada.

To capture the sunlight at the office complex, heliostats (mirrors) housed in a rooftop greenhouse follow the sun and deflect the rays through access holes in the floor into eight light pipes below. The heliostats are computer-controlled to follow the sun.

Her eyes may write volumes

Chantal Bedard, a 16-year-old cerebral palsy victim, is learning to use a specially designed pair of glasses to type with her eyes.

The new, high-tech glasses have a display of 60 letters, numbers and control functions and a sensor that picks up and registers the slightest eye movement.

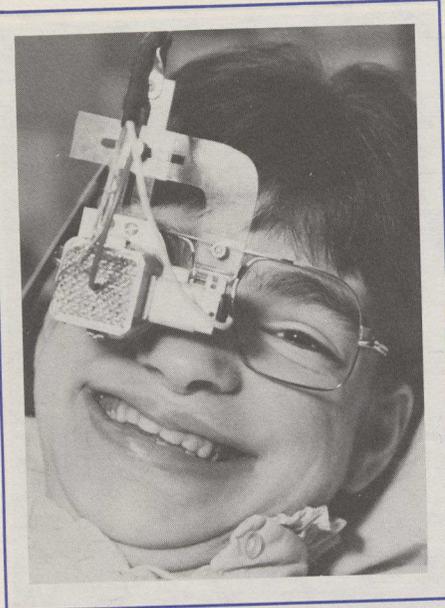
To type out a message, Miss Bedard looks at each letter or character, one by one, until her eye position is measured and the selection is recorded by the computer. To verify the choice, she must continue looking at the letter until a red light comes on behind it.

Each letter can be typed by the printer as it is chosen, or stored in the computer memory and printed when Miss Bedard has completed a sentence.

The glasses were designed and developed by Dave Kahn and Jan Heynen, two Bell Northern Research engineers (See *Canada Weekly*, July 11, 1984).

Miss Bedard, a special education student in Ottawa, has learned to read in English and French to the grade six level, but she can't talk and has only been able to communicate through eye movement and facial expression by visually selecting symbols that represent words or phrases from cards.

While the process of learning to com-



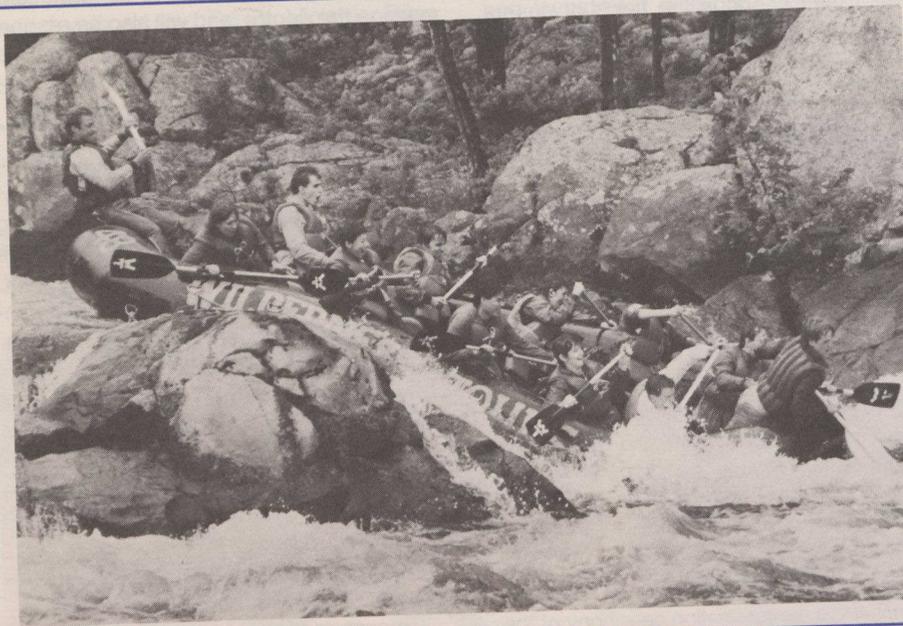
Wayne Cuddington, *The Citizen*

Chantal Bedard is learning how to type using her specially-designed high-tech glasses.

municate with the glasses is slow, Jan Heynen said Miss Bedard should eventually be able to type 20 words a minute or more. He said she'll also be able to hook up to a home computer.

Mr. Heynen said the device will be manufactured under the name Eye Link in the near future and will cost about \$2 000, not including the printer.

White-water rafters raise river economy



John Major, *The Citizen*

Cascading through rapids on daily, two-day or more white-water rafting excursions has become a highly popular form of entertainment and it has boosted the economies of a number of communities along the Ottawa River. Until 1981, Wilderness Tours was the only white-water rafting business along the river, but it has since been joined by a number of firms that offer various types of adventure tours.

Satellite station for SPOT

A new Canadian satellite receiving station, built to receive data from France's SPOT (Système pour l'observation de la Terre) remote sensing satellite, was officially opened on May 16.

This new station, located in the Gatineau Hills in Quebec, and Canada's other satellite receiving station in Prince Albert, Saskatchewan, will provide complete SPOT coverage of Canada and the United States. Both stations are operated by the Canada Centre for Remote Sensing.

The SPOT satellite, which was placed in orbit February 22, 1986, recorded its first images of Canada on February 26.

SPOT sensors give very high-resolution images of the earth's surface, similar to aerial photography. Black-and-white images are provided for detected objects as small as 10 metres in diameter and colour images for those as small as 20 metres. This compares with a resolution of 30 metres obtained from the US satellite, LANDSAT.

"Canadians will now be able to exploit a wide range of new remote sensing applications with SPOT images," said Minister of State for Mines Robert E.J. Layton, "particularly in mapping, geology and agricultural monitoring. SPOT can tilt its sensors on command, providing a unique stereo coverage for topographic surveying and mineral exploration."

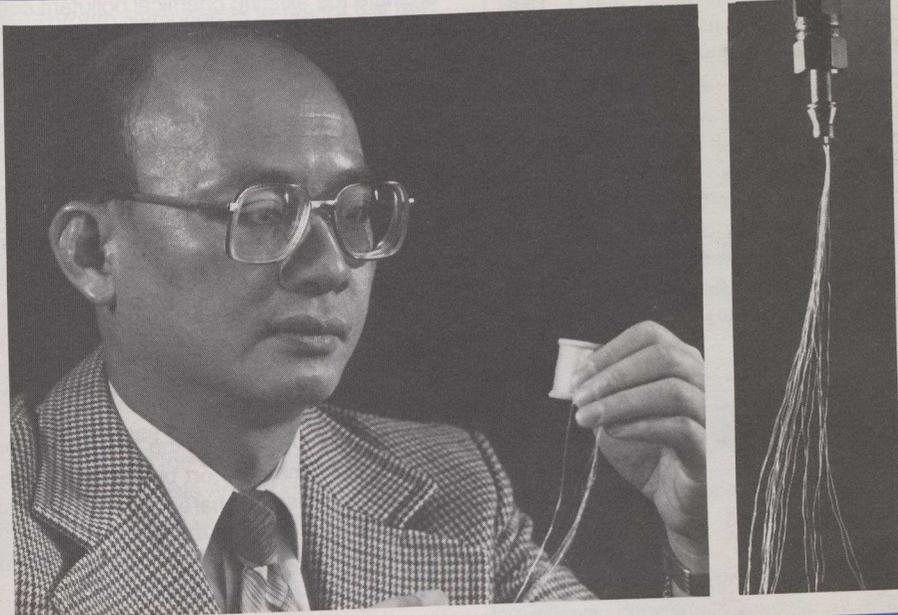
The new station consists of a large parabolic antenna 10 metres in diameter, set on a concrete base, and a prefabricated building to house the reception and recording facilities. "Quicklook" real-time images are developed at the site, but data are sent to the production facilities at Prince Albert for processing into high-quality computer tapes and photographic products.

The Gatineau satellite station is expected to be upgraded in 1987 to receive experimental imagery from the European Space Agency's ERS-1 remote sensing satellite, scheduled for launch in 1989. With microwave sensors, this satellite will be used primarily for experiments in ice, ocean and weather surveillance.

Mr. Layton said the station could also be expanded to receive and process SAR (synthetic aperture radar) data from Canada's own remote sensing satellite, currently being considered for a launch into near-polar orbit in the early 1990s.

The pole-orbiting platform, RADARSAT, with its SAR sensor, would provide an operational all-weather surveillance service for land and ocean resource management in Canada and around the world.

Separating gases through membranes



John Gertz (left photo) and Leslie Lorimezi

Dr. Pan compares strands of gas permeable membrane (close up right photo) with thread.

Scientists at the Alberta Research Council (ARC) have adapted a method of desalinating seawater through membranes into a gas-separation process that can remove carbon dioxide from natural gas or separate hydrogen from industrial waste gases. The new technology is being marketed by International Permeation Inc. of Calgary.

Hydrogen sulphide is toxic and must be removed before natural gas can be used safely as fuel, and carbon dioxide is a non-combustible gas which is often injected into

oil-wells to enhance production.

David Mitchell, ARC regional vice president, said the membrane process requires less energy than gas-refining processes based on absorption, chemical reactions, or cryogenic compression.

The membranes are bundles of hollow fibres made from cellulose acetate, a polymer that can be formed into thin membranes. The walls of the microscopic, hairlike tubules are porous, and some substances can diffuse through them faster than others.

In a desalination plant, the fibres are used to recover pure water from undrinkable brackish water because water molecules pass through the tube walls more easily than dissolved salt. Fresh water is collected in a vessel that surrounds the fibre bundle while the concentrated brine emerges outside the vessel from the ends of the tubes.

New procedure

To separate mixtures of gases by the same technique, special procedures must be followed or the membranes that are dried for use with gas become too fragile for commercial applications, said ARC project leader Chuen Pan. The water adhering to the fibres is replaced by one solvent, then with a second that is only weakly attracted to cellulose acetate and leaves the membrane structure intact when it evaporates.

The technique for treating membranes also ensures large differences in the rates at which different gases diffuse through the fibre walls. The greater this difference, or "membrane selectivity", the more efficient and cheaper is the gas-separation process, said Dr. Pan.

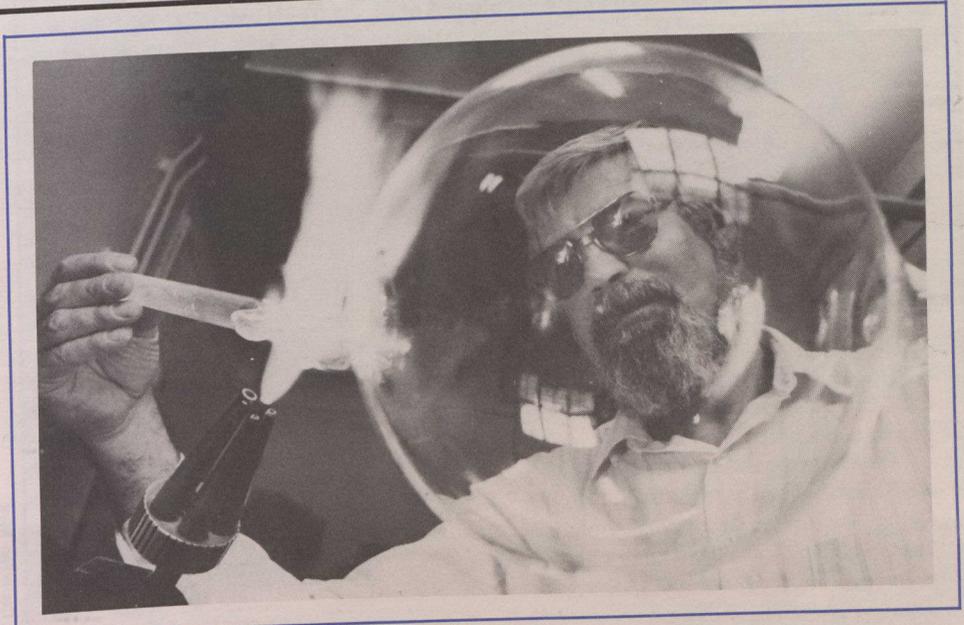
Gases such as hydrogen and helium are quicker because their molecules are smaller. Other fast-diffusing gases, such as hydrogen sulphide and carbon dioxide, interact with the membrane material and, in effect, dissolve in the membrane. Larger, non-reactive molecules of gases such as nitrogen or methane diffuse through at a much slower rate. The fibre bundles can therefore be effective in separating both hydrogen sulphide and carbon dioxide from methane, the predominant component of natural gas.

Glassblower honoured

Jack Vandenhoff, considered by many as the best scientific glassblower in Canada, has been honoured by the Canadian Society for Chemical Technology for his contribution to chemical technology and research.

While most scientific equipment is mass-produced, highly skilled glassblowers are needed to make specialized equipment for complicated experiments.

Mr. Vandenhoff has been a master glassblower at the National Research Council (NRC) for some 32 years and has designed and blown some of the most complicated and intricate scientific glass equipment in the country. Ranging in size from two metres to only fractions of a millimetre, the apparatus includes tubes, coils, cylinders and flasks. Some of the designs incorporate other materials as well, such as platinum electrodes, lasers and magnets.



Jack Vandenhoff applies heat to one of his designs.

Agreement on Niagara River clean-up

In a recent environmental review of the Canada/US border by Canada's Minister of the Environment Tom McMillan and US Environmental Protection Agency Administrator Lee Thomas, the clean-up of the Niagara River was a central issue in the talks which ranged from acid rain to problems of the Great Lakes.

In a joint communiqué, the two officials agreed on the need to achieve significant reductions in the loadings of toxic chemicals in the Niagara River and they committed

their agencies to complete, by July 1, 1987, a technical documentation of the pollution-control measures needed to reduce direct discharges to the river.

Mr. McMillan and Mr. Lee said that it is desirable to establish goals for the reduction of toxic loadings identified in the 1984 Niagara River Toxics Committee Report at the earliest possible date. As an example, they suggested that a 50-per-cent reduction of certain toxic chemicals, taking into account applicable water quality and drink-

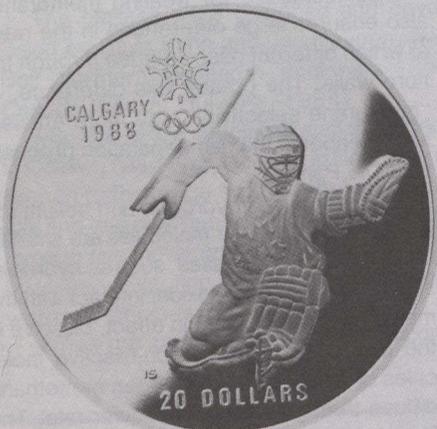
ing water standards, may be achievable by 1995 or sooner.

The two officials also agreed to coordinate the existing chemical pollutant control activities in the Niagara River in both countries; establish a common basis for assessing the toxic chemical loadings to the river; identify priorities for control measures which will reduce these loadings; and evaluate the success of these measures.

Canada and the United States are currently working actively on Niagara River issues. Activities include river monitoring, control of industrial and municipal discharges, proper management and clean-up of dumpsites, identification of chemicals of concern, and co-operation on other technical and scientific issues.

The plan to clean up the Niagara River represents a major effort by the two countries to address a shared toxic chemical pollution problem. It is the top priority for a co-operative approach to solving a problem in the Great Lakes Basin ecosystem.

Coin program for Calgary winter games



Hockey

Ten sterling silver coins portraying winter sports are being issued by the Royal Canadian Mint to commemorate the 1988 Calgary Olympic Winter Games.

The three-year Olympic coin program is titled "The Pursuit of Excellence" to exemplify the dedication of Olympic athletes. The program was set up to support the construction of facilities for the 1988 Olympic Winter Games in Calgary as well as help provide funding for all Olympic athletes.

The coins are being released in pairs at six-month intervals. Downhill skiing and speed skating coins were released in September 1985 followed by the biathlon and hockey coins in February

1986. The series will continue with cross-country skiing and free-style skiing; figure skating and curling; and ski-jumping and bobsled.

The designs were selected from over 200 illustrations submitted by some of Canada's finest artists. Four of the designs – downhill skiing, hockey, cross-country skiing and curling – were designed by Ian Stewart of St. John's, Newfoundland. Toronto artists John Mardon and Raymond Taylor each designed two coins: biathlon and bobsled; and figure skating and ski-jumping. Friedrich Peter of Vancouver, BC and Walter Ott of Ottawa, Ontario were responsible for speed skating and free-style skiing respectively. The obverse of all the coins bears the effigy of Queen Elizabeth II, by Arnold Machin, and the year of issue.

These sterling silver coins have a face value of \$20, the highest face value of any Canadian silver coin. Each coin contains one troy ounce of pure silver and is struck in proof finish only (brilliant background with a frosted relief).

The Olympic coin program is limited to a mintage of five million coins. Of this total, 3.5 million have been allocated for series subscription.

The coins are available in Canada for \$37 each by mail order from the Royal Canadian Mint or from retail outlets. They are also available in more than 20 countries in North America, Europe, Asia and Australia.



Biathlon

Flexi-fuel vehicle tests

Ford of Canada and Shell Canada are working to produce "smart" cars that can tell the difference between gasoline and methanol, and a mixture of the two. The cars will be able to run on both fuels from a common fuel tank.

This year, the flexible fuel system is being tested in up to 20 experimental Ford *Crown Victorias* in Ontario. Both the federal and Ontario governments are helping to finance the \$1.4-million program.

Tests on the flexible fuel system began in 1983 when Ford *Escorts* were fitted with an optical fuel sensor and a modified fuel injection system. As a result of these tests the company expanded the program.

Automatic adjustment

In the current tests, the sensor will automatically adjust the engine to whatever methanol-gasoline fuel mixture is in the tank. An ethanol compatibility study is also planned as part of the program, to determine whether the sensor will also work for ethanol-gasoline mixtures.

A workable flexible-fuel vehicle is expected to be a significant technological development. Cars that could run on gasoline and methanol would help stretch current gasoline supplies, and also help prove that methanol is a feasible, competitive alternative to gasoline. Methanol can be produced from a variety of sources, including natural gas, coal, wood and wood waste.

Toronto orchestra in Europe

The Toronto Symphony Orchestra will perform 17 concerts in nine European countries from August 24 to September 19.

The tour will open with performances at the Edinburgh Festival on August 24 and 28, and continue with performances in Ireland, England, Wales, the Federal Republic of Germany, the Netherlands, Belgium, Denmark, Finland, Sweden and France.

The concert in London at the Royal Albert Hall will be broadcast by the British Broadcasting Corporation as part of its "Proms" concert series. The symphony's stops in Denmark, Finland and Sweden represent the first appearance of a major Canadian cultural organization in the Nordic countries.

Canadian pianists Angela Hewitt of Ottawa and Louis Lortie of Quebec will perform with the orchestra on the tour.

An unusual feature will be the performance of Stravinsky's ballet *The Soldier's Tale* at the Edinburgh Festival, featuring National Ballet of Canada stars Karen Kain and Peter Ottman as the princess and the soldier.

This European tour will be the orchestra's last under the direction of conductor Andrew Davis, who after 13 years with the symphony announced he will leave at the end of the 1988 season.

Dutch masterworks mark Vancouver's centennial



Jim Jardine, VAG

From left: Pieter van Vollenhoven, Princess Margriet Francisca of the Netherlands, who was born in Ottawa during the Second World War, Vancouver Art Gallery director Jo-Anne Birnie Danzker and Netherlands Ministry for Fine Art director Robert de Haase, at the gala opening on April 3 of *The Dutch World of Painting*. This was the first in a series of major international exhibitions organized by the Vancouver Art Gallery for the city's centennial and Expo celebrations. The exhibition, which runs until June 29, includes almost 100 Dutch masterworks produced between 1540 and 1880 by such artists as Frans Hals, Rembrandt van Rijn, Vincent van Gogh, Jan Steen and Nicolaes Maes. It was assembled from leading public collections in co-operation with the Netherlands Office for Fine Arts.

Canadian tour for ancient Peruvian ceramics

The largest collection of ancient Peruvian treasures to be shown in North America is touring various institutions in Canada through 1987.

The exhibition, *Ancient Cultures of Peru*, features 120 pieces representing five separate cultures — Chavin, Vicus, Nasca, Viru and Chimu — spanning the period 1200 B.C. to A.D. 1400. They were selected from the



Nasca culture double spout and bridge vessel with mythological outlines.

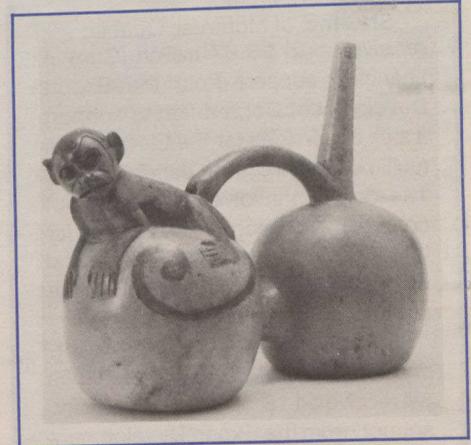
collection at the Museo des Banco Central de Reserva del Perú.

All the objects in the exhibition share common elements such as the forms and technical resources for their fabrication, and as a lesser degree, the use of colour. The main differences are in their geographical and temporal location, and in their meaning for their creators.

The ancient Peruvians imbued ceramic pieces with their unique vision of the world, moral values and religious experiences. Since the ceramics have a deep religious and mythical meaning, they are more an expression of cultural roots than of use.

Chavin pottery is frequently globular in shape and is made, without moulds, from fine clay. Vicus pottery is characterized by its rough surface (because of the quality of the local clay used) and by the variety and detail in its styling.

The Nasca were excellent potters, known for their innovative use of colour and for the variety and quality of their designs. Viru pottery was made by hand or with a mould and baked in an open oven. Most of the Chimu vessels are black, the pottery being



National Museum of Man photos

Viru culture double-chambered and conical spout vessel with zoomorphic figure representing a monkey.

burnished then smoked to achieve that distinctive colour.

The exhibition which opened at the Owens Art Gallery in New Brunswick, is on view at the Museum of Man in Ottawa. In November, it will be presented at the Art Gallery of York University in Toronto and, in 1987, it will be shown first at the University of Winnipeg and then at the Nickle Art Museum in Calgary, Alberta.

Trade update

Minister for International Trade

James Kelleher has announced that the search for Canada's top exporters in 1986 has begun. The winners will receive 1986 Canada Export Awards to be presented by Mr. Kelleher on October 14 in Vancouver, British Columbia.

Capsule Technology International of Windsor, Ontario was awarded a gold medal at the 1986 Leipzig Spring Fair for the quality of its advanced technology. Only a few of some 9 000 exhibitors were honoured at the East German trade fair.

Euclid Canada Limited of Guelph, Ontario, will receive financing support of up to \$2.64 million (US) from the Export Development Corporation for a sale of five Model R170 off-highway haulers to Yugoslavia. Euclid Canada is one of the world's largest manufacturers of off-highway haulers.

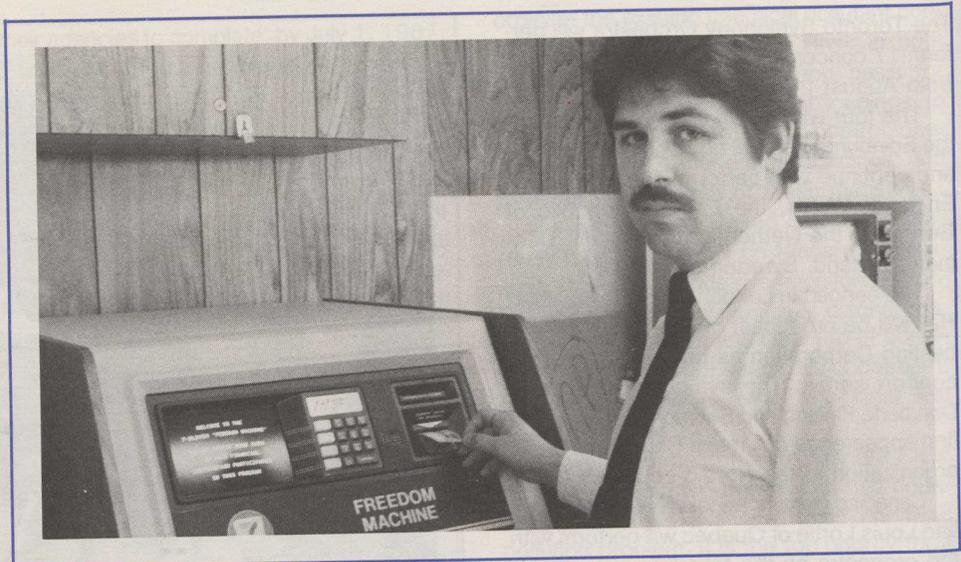
Northern Telecom Limited of Mississauga, Ontario has signed a \$1.2-million agreement for the supply of a 5 000-line *Meridian SL-1* Integrated Services Network to the Shoudu Iron and Steel Company in Beijing, China. The sale is the largest for Northern Telecom to a Pacific Rim country.

SNC Inc. of Montreal, Quebec will receive up to \$3.57 million (Cdn) in financing support from the Export Development Corporation to support a sale of services for the El Haouareb multi-purpose irrigation dam in Tunisia. The contract involves the supply of construction management services for the second phase of the project and engineering services related to the start-up and commissioning.

Spiroll Kipp Kelly (1984) Incorporated (SKK) of Winnipeg, Manitoba will receive \$113 500 (US) in financing support from the Export Development Corporation for a sale of hollow-core extruding machinery to Strojexport of Prague, Czechoslovakia. SKK develops and sells hollow-core extrusion equipment, air flotation grain separation equipment and rotary granulators.

Canadian Marconi Company (CMC) of Montreal, has been awarded a contract by the US Army to design, fabricate and test modules of a new digital UHF radio. Initial funding is valued at \$11.7 million (US).

Machines provide cash at new outlets



James Lewcun, The Globe and Mail

A recently installed automated teller machine (ATM), which will provide cash for card holders, is demonstrated by assistant manager Art Northcott at a 7-Eleven store in Toronto. The machines are being installed in convenience stores, supermarkets and gas stations across the country as the trend towards shared machines by financial institutions accelerates. Until recently, ATMs were found mainly in banks, trust companies and credit unions and customers used a specific card issued by a single financial institution.

News briefs

Secretary of State for External Affairs

Joe Clark met with European Communities Commissioner for External Relations and Trade Policy Willy De Clercq in Vancouver in May to discuss Canada/EC bilateral relations including trade. The EC is Canada's second largest trading partner and some 58 per cent of Canadian exports are manufactured goods. Mr. Clark and Mr. De Clercq also co-chaired the sixth session of the Canada-EC Joint Co-operation Committee which reviewed sub-committee reports on science and technology and industrial co-operation initiatives.

Minister of Indian Affairs and Northern

Development David Crombie toured the Arctic in the Union of Soviet Socialist Republics, May 23 to June 9, to examine Soviet northern development strategies, the impact of development on traditional native communities and on the arctic environment, and explore opportunities for strengthening Canada/USSR scientific and economic co-operation in the circumpolar region.

Communications Minister Marcel

Masse has announced that \$20 million has been allocated over five years for a nationwide, decentralized, voluntary networking system for the exchange of bibliographic information in Canada. The National Library will co-ordinate the project.

Can we help you?

If you would like the address of a company or organization mentioned in this issue of *Canada Reports*, please fill in and return this form to the address in the box below.

Name of company or organization:

Senders name and address:

.....
.....
.....
.....
.....

Canada Reports is published by the External Communications Division, Department of External Affairs, Ottawa, Ontario, Canada, K1A 0G2.

Telex: 053-3745.

Editor: Carole Stelmack.

Comments or suggestions from readers are welcome. A credit is requested for any material reprinted.

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

Canada

Canada Reports index

(March - June, Volume 2, Nos. 5 - 12)

- Acid rain**
Canada-US agreement, Vol. 2, No. 8, P. 1
- Africa** *see* Aid; Conferences; Foreign policy; United Nations; *and* Visits
- Agriculture**
Dairy industry, Vol. 2, No. 10, P. 3
Moisture measure, Vol. 2, No. 9, P. 7
- Aid** (*see also* Foreign policy)
CIDA in Africa, Vol. 2, No. 10, P. 5
Philippines and Haiti, Vol. 2, No. 7, P. 7
Support for Haiti, Vol. 2, No. 5, P. 2
- Air Canada** *see* Anniversaries
- Anniversaries**
Air Canada, Vol. 2, No. 10, P. 1
- Archaeology**
Fossils in Nova Scotia, Vol. 2, No. 5, P. 7
- Architecture**
Toronto stadium, Vol. 2, No. 8, P. 7
- ASEAN** *see* Trade
- Australia** *see* Trade fairs
- Automatic tellers** *see* Machinery
- Automobiles** *see* Trade
- Aviation** *see* Anniversaries
- Awards**
Export winner, Vol. 2, No. 12, P. 1
Jack Vandenhoff, Vol. 2, No. 12, P. 5
- Back-treatment chair** *see* Medicine
- Baumann, Alex** *see* Olympics
- Bee Buggy** *see* Transportation
- Birds** *see* Stamps
- Britain** *see* Trade; Trade fairs; *and* Visits
- British Columbia** *see* Transportation
- Budget** *see* Government
- Bus elevator** *see* Transportation
- Canadian International Development Agency (CIDA)** *see* Aid
- Caribbean** *see* Trade
- China** *see* Visits
- Coins** *see* Olympics
- Commonwealth** *see* Trade
- Commonwealth Day** *see* Foreign policy
- Communications**
Glasses for typing by eye movement, Vol. 2, No. 12, P. 4
Video-phones, Vol. 2, No. 9, P. 8
- Computers** (*see also* Trade fairs)
Canada-US-Japan pact, Vol. 2, No. 5, P. 5
Study on sales, Vol. 2, No. 5, P. 5
- Computer chips** *see* Technology
- Conferences**
Southern African Development Coordination, Vol. 2, No. 5, P. 2
- Dairy industry** *see* Agriculture
- Early Canadian art** *see* Exhibitions
- Electronic components**
Impurity monitor, Vol. 2, No. 9, P. 7
- Entertainment**
Ballet in US, Vol. 2, No. 10, P. 7
Toronto symphony in Europe, Vol. 2, No. 12, P. 7
- Environment**
Agreement on clean-up of Niagara River, Vol. 2, No. 12, P. 6
- Europe** *see* Entertainment; *and* Trade fairs
- Exhibitions**
Dutch masterworks, Vol. 2, No. 12, P. 7
Italian masterpieces, Vol. 2, No. 9, P. 6
James Morrice, Vol. 2, No. 6, P. 7
Nineteenth century Canadian art, Vol. 2, No. 11, P. 7
Nova Scotia folk art, Vol. 2, No. 7, P. 7
Peruvian ceramics, Vol. 2, No. 12, P. 7
Technological development in photos, Vol. 2, No. 5, P. 6
- EXPO 86**
Entertainers, Vol. 2, No. 8, P. 6
Opening, Vol. 2, No. 10, P. 6
SkyTrain, Vol. 2, No. 7, P. 6
Stamps, Vol. 2, No. 7, P. 6
- Exports** *see* Awards
- FIME '86 International** *see* Trade fairs
- Flexible fuel system** *see* Technology
- Folk art** *see* Exhibitions
- Foreign policy**
Aid to Africa, Vol. 2, No. 10, P. 4
Commonwealth Day, Vol. 2, No. 7, P. 6
Francophone summit, Vol. 2, No. 7, P. 1
Peace program, Vol. 2, No. 11, P. 4
Tokyo summit, Vol. 2, No. 11, P. 1
- Forest machinery** *see* Trade fairs
- France** *see* Foreign policy
- Francophone summit** *see* Foreign policy
- Gas separation** *see* Technology
- Gatineau Hills** *see* Satellite reception
- Glass** *see* Technology
- Government**
Budget, Vol. 2, No. 6, P. 6
Investment kit, Vol. 2, No. 8, P. 5
Investment opportunities, Vol. 2, No. 8, P. 4
Space research, Vol. 2, No. 10, P. 7
- Haiti** *see* Aid
- High-tech glasses** *see* Communications
- Holy See** *see* Visits
- Home products** *see* Trade fairs
- Impurity monitor** *see* Electronic components
- Insulin injector** *see* Medicine
- Investment** *see* Government
- Ireland** *see* Visits
- Italy** *see* Exhibitions; *and* Visits
- Japan** *see* Computers; Foreign policy; Trade fairs; *and* Visits
- Jewellery**
Michele Lynn, Vol. 2, No. 11, P. 5
- Machinery**
Automatic tellers, Vol. 2, No. 12, P. 8
Dump truck design, Vol. 2, No. 6, P. 4
Looms, Vol. 2, No. 11, P. 8
- Maid of the Mist** *see* Transportation
- Medicine**
Back-treatment chair, Vol. 2, No. 10, P. 6
Insulin injector, Vol. 2, No. 11, P. 5
- Michele Lynn** *see* Jewellery
- Microwave Landing System** *see* Technology
- Middle East** *see* Visits; Trade; *and* Peace-keeping
- Mirrors** *see* Technology
- Morrice, James** *see* Exhibitions
- Multicultural poster, Vol. 2, No. 10, P. 7
- Netherlands** *see* Exhibitions
- News briefs** (*all issues* P. 8)
Aid to Kenya, Vol. 2, No. 7
Aid to Third World, Vol. 2, No. 5
Aid to UNHCR, Vol. 2, No. 11
Aid to Zaire, Vol. 2, No. 9
Alberta government, Vol. 2, No. 11
Arctic haze test, Vol. 2, No. 10
Canada Science Circus, Vol. 2, No. 7
CIDA aid to Zaire, Vol. 2, No. 8
Composers society, Vol. 2, No. 7
Export controls, Vol. 2, No. 6
Foon, Dennis, Vol. 2, No. 8
Heritage rivers, Vol. 2, No. 8
Hodgins, Jack, Vol. 2, No. 11
House building, Vol. 2, No. 10
Labour market, Vol. 2, No. 10
Leaded gas phase out, Vol. 2, No. 9
Library project, Vol. 2, No. 12
Manitoba government, Vol. 2, No. 8
Mining study, Vol. 2, No. 10
National atlas of Canada, Vol. 2, No. 8
Nuclear reactors, Vol. 2, No. 10
Nuclear waste, Vol. 2, No. 7
The Nylons, Vol. 2, No. 9
PEN Congress, Vol. 2, No. 5
Pensions, Vol. 2, Nos. 10; 11
Scandinavian tour, Vol. 2, No. 11
Science agreement, Vol. 2, No. 5
Seismic array, Vol. 2, No. 5
Skating champions, Vol. 2, No. 8
Skiing champions, Vol. 2, Nos. 6; 7
TECCART International, Vol. 2, No. 6
USSR Arctic tour, Vol. 2, No. 12
Vollenweider, Richard, Vol. 2, No. 11
Willy De Clercq visit, Vol. 2, No. 12
- Niagara River** *see* Environment
- Nova Scotia** *see* Archaeology; *and* Exhibitions
- Nuclear waste**
Canada-US agreement, Vol. 2, No. 11, P. 4

Olympics

- Alex Baumann, Vol. 2, No. 5, P. 8
- Coin program, Vol. 2, No. 12, P. 6

Packaging equipment see Trade fairs

Parks see Stamps

Peace program see Foreign policy

Peacekeeping

- Middle East, Vol. 2, No. 9, P. 3

Peru see Exhibitions; and Visits

Philippines see Aid; and Visits

Poultry see Trade

Printing products see Trade fairs

Quebec see Stamps

Quebec City see World Heritage list

Railway tunnel see Transportation

Robots see Technology

Satellite reception

- New station in Gatineau Hills, Vol. 2, No. 12, P. 4

Soil moisture measure see Agriculture

Solar lighting see Technology

South Korea see Visits

Space see Government

Stamps (see also EXPO 86)

- Birds in flight, Vol. 2, No. 11, P. 6
- Quebec park, Vol. 2, No. 9, P. 7

Switzerland see Trade

Technology (see also Exhibitions)

- Future computer chip, Vol. 2, No. 6, P. 5
- High-tech trains, Vol. 2, No. 6, P. 4
- Insulated glass, Vol. 2, No. 6, P. 4
- Membrane gas separation, Vol. 2, No. 12, P. 5
- Microwave Landing System, Vol. 2, No. 5, P. 6
- Mirrors made in space, Vol. 2, No. 6, P. 4
- Robotic hand, Vol. 2, No. 6, P. 5
- Solar lighting, Vol. 2, No. 12, P. 3
- Testing flexi-fuel vehicles, Vol. 2, No. 12, P. 6
- Underwater robot, Vol. 2, No. 11, P. 6

Textiles see Machinery

Third World (see also Aid)

- Film on water shortage, Vol. 2, No. 11, P. 5

Toronto see Architecture

Trade

- Automobile sales, Vol. 2, No. 8, P. 7
- Canada-ASEAN, Vol. 2, No. 6, P. 3
- Canada-Middle East, Vol. 2, No. 9, P. 3
- Canada-Swiss conference, Vol. 2, No. 9, P. 5
- Canada-US, Vol. 2, No. 7, P. 3; Vol. 2, No. 8, P. 2
- Commonwealth Caribbean plan, Vol. 2, No. 6, P. 3
- Poultry exports, Vol. 2, No. 10, P. 8
- Visit of international trade minister to Britain, Vol. 2, No. 5, P. 3; to ASEAN region, Vol. 2, No. 6, P. 1

Trade fairs

- CEBIT 86 (computers) in West Germany, Vol. 2, No. 5, P. 4
- DRUPA 86 (printing products) in West Germany, Vol. 2, No. 9, P. 4
- Electro Mini/Micro (electronic components) in the US, Vol. 2, No. 9, P. 5
- European, Vol. 2, No. 7, P. 5
- FIME '86 (forest machinery) in Australia, Vol. 2, No. 7 P. 5
- International Housewares Exposition in the US, Vol. 2, No. 7, P. 4
- Kitchen/Bath Industry Show in the US, Vol. 2, No. 7, P. 4
- PAKEX '86 (packaging equipment) in Britain, Vol. 2, No. 8, P. 3
- Sales in West Germany and Japan, Vol. 2, No. 9, P. 5

Trade update (all issues P. 8)

- AGDEVCO, Vol. 2, No. 5
- Air Canada, Vol. 2, No. 8
- Asian Import Conference, Vol. 2, No. 7
- Babcock and Wilcox, Vol. 2, No. 7
- Bombardier Inc., Vol. 2, No. 10
- Bombay trade office, Vol. 2, No. 8
- CAE Industries Ltd., Vol. 2, No. 6
- Cairo trade fair, Vol. 2, No. 5
- Canada Export Awards, Vol. 2, No. 12
- Canadair Limited, Vol. 2, No. 8
- Canadian Marconi, Vol. 2, Nos. 10; 12
- Cansulex Ltd., Vol. 2, No. 8
- Cape Breton Development Corp. Vol. 2, No. 9
- Capsule Technology, Vol. 2, No. 12
- Champion Road, Vol. 2, No. 6
- Combustion Engineering, Vol. 2, No. 11
- Computing Devices Co., Vol. 2, No. 7
- De Havilland Aircraft, Vol. 2, No. 10
- Delegation to China, Vol. 2, No. 9
- Euclid Canada Limited, Vol. 2, No. 12
- Export publications, Vol. 2, Nos. 6; 7; 10
- Exports to China, Vol. 2, No. 9
- Exports to Mexico, Vol. 2, No. 11
- Geac Computer Corp., Vol. 2, No. 9
- Health products, Vol. 2, No. 5
- Hydro arrangements, Vol. 2, No. 6
- Inco Ltd., Vol. 2, No. 10
- Kadoke Display Ltd., Vol. 2, No. 10
- Marketplace 86, Vol. 2, No. 9
- McCain Foods Ltd., Vol. 2, No. 8
- Millers association, Vol. 2, No. 7
- Mitel Corporation, Vol. 2, No. 11
- Northern Telecom, Vol. 2, Nos. 11; 12
- Photofax Manufacturing, Vol. 2, No. 9
- Pre-Con Co., Vol. 2, No. 10
- SAGIT, Vol. 2, No. 5
- SED Systems Inc., Vol. 2, No. 11
- Sentrol Systems Ltd., Vol. 2, No. 8
- Simon-Day Limited, Vol. 2, No. 6
- SNC Inc., Vol. 2, No. 12
- Spar Aerospace Ltd., Vol. 2, No. 9
- Spiroll Kipp Kelly, Vol. 2, No. 12

Urban Transportation Development Corp., Vol. 2, No. 6

Vulcan Industrial Packaging Ltd., Vol. 2, No. 7

Wheat board, Vol. 2, Nos. 5; 11

Trains see EXPO 86; and Technology

Transportation (see also EXPO 86)

- All-terrain wheelchair, Vol. 2, No. 8, P. 8
- Bee Buggy electric cart, Vol. 2, No. 11, P. 5
- Interior bus elevator, Vol. 2, No. 5, P. 1
- Maid of the Mist* tourist boat, Vol. 2, No. 11, P. 6
- Railway tunnels bored through B.C. mountains, Vol. 2, No. 5, P. 7
- White-water rafting, Vol. 2, No. 12, P. 4

Trucks see Machinery

Underwater robot see Technology

United Nations

- Special session on Africa, Vol. 2, No. 12, P. 3

United States see Acid rain; Computers; Entertainment; Nuclear waste; Trade; and Trade fairs

Vandenhoff, Jack see Awards

Video-phones see Communications

Visits (see also Trade)

- Governor general in Britain, Vol. 2, No. 7, P. 8; in Italy and Holy See, Vol. 2, No. 8, P. 3
- International relations minister in Algeria, Vol. 2, No. 10, P. 4; in Japan, South Korea and China, Vol. 2, No. 12, P. 2
- Prime minister in Japan, China and South Korea, Vol. 2, No. 11, P. 1
- Prime minister of Peru, Vol. 2, No. 5, P. 3
- Secretary of state for external affairs to Middle East, Vol. 2, No. 9, P. 1; to Ireland and the Philippines, Vol. 2, No. 12, P. 3

Water see Third World

West Germany see Trade fairs

Wheelchairs see Transportation

White-water rafting see Transportation

World Heritage list

- Quebec City, Vol. 2, No. 6, P. 8