

Canada Today

CAL EA 967

CLL

July 1980

c.l
DOCS

Published by the Canadian High Commission, Singapore

July 1980



Canada Day Edition – July 1

	Page
<i>Alberta approves coal-fired station</i>	2
<i>JET-age air traffic control</i>	2
<i>Canadian Nuclear Industry</i>	2
<i>Singapore Firm Acquires Canadian Submersibles</i>	2
<i>ASEAN Seminar on Technology Transfer</i>	2
<i>Fibre Optics in Canada</i>	3
<i>Canadian specialized vehicles</i>	4
<i>A craft for all seasons</i>	4
<i>SED – A High Technology Canadian Company</i>	5
<i>The Canadian Teletext System "Telidon" – better than the European competition?</i>	6
<i>Outdoor Vacations In Canada – 1980</i>	7
<i>De Haviland gets 55 Dash 8 orders</i>	8
<i>Canadair Aircraft Sales</i>	8
<i>Computers in China</i>	8
<i>System reduces radiation risk</i>	8
<i>Brave New Worlds for Nuclear Medicine</i>	9
<i>Hospital uses – magnesium for heart attack victims</i>	9
<i>The Hydrogen Merchants</i>	10
<i>Satellites</i>	10
<i>Canada Aids Kampuchean Recovery</i>	10
<i>Refugees To Canada</i>	11
<i>News Briefs</i>	12



"On the occasion of Canada's 113th birthday I should like to take the opportunity of extending greetings and good wishes to all our readers."

– L. Michael Berry
Canadian High Commissioner

Canada's Foreign Minister Visits Singapore

Dr Mark MacGuigan, Canada's Secretary of State for External Affairs will pay an official visit to Singapore June 29 – July 1. During the two day visit Dr MacGuigan will hold discussions with Singapore government leaders including Prime Minister Lee Kuan Yew, Second Deputy Prime Minister (Foreign Affairs) S. Rajaratnam, Foreign Minister S. Dhanabalan and Trade and Industry Minister Goh Chok Tong. For many years Canada and Singapore have enjoyed good relations founded upon a shared membership in the Commonwealth and many similar perceptions of international issues. Dr MacGuigan's trip will reinforce this relationship and highlight the fact that Singapore is Canada's largest trading partner in Southeast Asia.

Prior to his arrival in Singapore Dr MacGuigan visited Kuala Lumpur from June 27 – 29 where he participated in discussions with ASEAN Foreign Ministers subsequent to their annual meeting. Among the subjects reviewed were events in Indochina, the Soviet intervention in Afghanistan and Canada-Asean development co-operation projects. The meetings in Kuala Lumpur served to strengthen the growing relationship between Canada and Asean.

Dr MacGuigan's visit to Southeast Asia follows attendance at a NATO Ministerial meeting in Ankara and the Venice Summit which brought together leaders of the West's seven major economic powers.

Alberta approves coal-fired station

The Alberta Energy Resources Conservation Board has recommended approval of a major coal-fired electricity generating station proposed by the municipally owned Edmonton Power Ltd.

At the same time, the Board has deferred an application to expand an existing coal-fired plant proposed by Calgary Power Ltd. of Calgary.

Calgary Power had sought approval to add two 400-megawatt units to a central Alberta plant fuelled by coal. The board has decided to defer an approval until "the need for additional electricity generating capacity has been demonstrated."

Meanwhile, the company can go ahead, subject to provincial approval, with the construction of two 375-megawatt generating units and an adjacent coal mine producing 2.7 million tons of coal a year.

JET-age air traffic control

What's labeled as one of the world's most advanced air traffic control systems goes into action in Moncton Canada this month, and will ultimately span the country. Called JETS (Joint En-route Terminal System), it was jointly developed by Transport Canada and Toronto-based CAE Electronics Ltd., the prime contractor.

The \$26-million radar display system will show aircraft as small triangles instead of blips. Each triangle will indicate the aircraft's position, flight number, altitude, groundspeed and existence of an emergency on the aircraft (such as radio failure).

Another important feature of JETS: it will monitor the aircraft detected by remote radar sites, giving controllers a better idea of the traffic to expect at their terminal. Digitizers, costing another \$3 million, will convert signals from remote radar into electronic pulses for transmission through telephone lines.

Should JETS find success in the export market, several Canadian-based firms will benefit besides CAE. For instance, Perkin-Elmer Data Systems made the minicomputers, Vancouver's Anatek Ltd. the power supplies, Leigh Instruments the digitizers and Digital Methods Ltd. the computer programs.

Canadian Nuclear Industry

U.S. nuclear physicist and Nobel Prize winner Hans Bethe, quoted in The New Yorker, called the Candu reactor a "technical wonder" and praised its "fantastic" reliability. The science research unit at Sussex University recommended earlier this year that Britain, which has been putting its money into pressurized water reactors, adopt the Candu's heavy water system instead. The Sussex group described the Candu as the best heavy water reactor system in the world. Ontario Hydro, in a report on World Power Reactor Performance, found that of 222 nuclear reactors operating world-wide with over 500 megawatts in 1979, six of the top seven most efficient units were Canadian. (The exception, the second highest, was West Germany's *Stade 1*.)

Singapore Firm Acquires Canadian Submersible

Unmanned submersibles designed and manufactured in Port Moody, British Columbia, are rapidly becoming the workhorses of the offshore oil exploration industry.

International Submarine Engineering Ltd. (ISE), located in the Vancouver suburb, builds unmanned tethered remote control vehicles equipped with television cameras and a variety of manipulator systems. The submersible is able to perform a wide variety of underwater tasks such as inspection, survey and support.

ISE's latest development, the *DART*, has just completed testing, and the first unit has been delivered to the Singapore-based Kalatec Seatronics for underwater cable inspection.

ISE is now developing a submarine, the *Wrangler*, which will be manned by one person. The machine should be ready for testing in the coming months.

Works like diver

"We feel that up to 70 per cent of the jobs that once required a diver now can be performed by these vehicles," says Hari Sharma, ISE vice-president, finance.

"These units can inspect pipelines, drilling platforms, undersea cables, repair and recover articles, work under the ice caps — all at up to 3,000 feet below the surface," he says.

The submersible is controlled by an operator, sitting at a control panel on the oil rig or support ship, using the television camera as the operator's eyes and the manipulator to do the actual work.

ISE designs and manufactures three of the most popular submersibles; the large one- to three-ton *TROV*; the intermediate 450-lb. *TREC* and the *DART*, a 100-lb. deep access (1,200 feet) reconnaissance television camera.

The first *TROV* sale was to the Canadian Centre for Inland Waters, in September 1975. The ten other sales have been to American, French and British oil industry servicing companies. Their most recent sale, to the United States Navy, is in conjunction with their Underwater Recovery System. This *TROV* will recover test torpedoes on the bottom of undersea testing ranges.

The *TREC* has been sold exclusively to foreign buyers. A *TREC* for instance, was used to photograph the underwater damage caused by the June 1979 oil well accident in the Gulf of Mexico.

ASEAN Seminar on Technology Transfer

The Canadian International Development Agency (CIDA) in cooperation with the Canadian Department of Consumer and Corporate Affairs (CCA) and the World Intellectual Property Organization (WIPO) sponsored a seminar on licensing and technology transfer June 17 to 26 in Kuala Lumpur. Participants were from all ASEAN countries.

The purpose of the seminar was to promote better awareness and understanding of the industrial property system as an effective tool in the industrial development process and to provide initial advisory services for the improvement and modernization of the participants' industrial property systems. The seminar covered a wide range of topics related to licenses and agreements and their applications. The 24 participants were government officials and decision takers in the field of transfer of technology and industrial property specialists.

Fibre Optics in Canada

The advantages of fibre optics over conventional transmission techniques have stimulated the interest of telephone companies, cable operators, governments and others in Canada who see telecommunications networks of copper wire, coaxial cable and microwave radio reaching physical and economic limits. Available and economic communications bandwidths are in short supply.

Two important Canadian breakthroughs in fibre optic technology have increased network efficiency — one is the development of two-way transmission techniques over a single optical fibre, the other is development of an optical coupler for transmission from one fibre to others, which simplifies the network.

State-of-the-art research on fibre optics is being done in Canada by the government, private sector companies and numerous universities. Among the main researchers are:

- The Communications Research Centre, Ottawa, which is the research facility of the federal Department of Communications;

- Bell-Northern Research, Ottawa, a subsidiary of Bell Canada and Northern Telecom;

- Canstar Communications, Montreal, a subsidiary of Canada Wire and Cable;

- Phillips Cables, Brockville, Ontario.

The largest manufacturers in Canada of fibre optic cable and equipment are:

- Northern Telecom, Montreal, a subsidiary of Bell Canada; it is involved in almost all areas of fibre optics systems and components;

- Canstar Communications, Montreal, a subsidiary of Canada Wire and Cable, principally involved in fibre fabrication and systems development;

- Phillips Cables recently began manufacturing fibre optic cable.

There are several fibre optics projects currently underway in Canada.

The Department of National Defence in 1976 had an internal fibre optics system in its Ottawa headquarters. Bell-Northern Research supplied the cable which can carry telephone, two-way TV and data for future telecommunications systems.

Bell Canada connected two switching centres in downtown Montreal by a 1.5 km long fibre optic cable containing six fibres in October 1977. The cable, which is about a centimetre thick, has been used for video conferencing. The project was a joint venture of Bell Canada and its subsidiaries, Northern Telecom and Bell-Northern Research.

One of the longest and highest capacity fibre optic cables in the world becomes operational in 1980. Alberta Government Telephone (AGT) Systems is installing a 53 km long fibre optic cable to connect Calgary and Cheadle, Alberta. The cable has 12 fibres with a capacity for handling 20,160 telephone calls simultaneously. It can also carry video and data signals. The cable can carry 274 million bits per second. The \$2*million contract for provision of the fibre optic cable was awarded to Canstar Communications of Montreal and was the largest of its kind in the world.

In October 1978, British Columbia Telephone (BCTel) installed a 7.4 km long fibre optic cable linking a switching centre in Vancouver to one in North Burnaby. The cable was provided by GTE Lenkurt (Canada) and Phillips Cables Ltd. BC Tel is evaluating the fibre optic transmission system. The cable has been operational since March 1979 and is being used for transmission of voice and data signals and has a capability for video signals.

In December 1978, Bell Canada inaugurated a two-year fibre optics project involving residential homes in Toronto's Yorkville district. For the first time in North America, telephone subscribers were linked by optical fibres to the switched network.

The fibre optic system provides voice, data and video distribution over a number of subscriber loops. The system demonstrates the capability of simultaneous and two-way transmission of telephony, data and video signals over a single fibre as well as the feasibility of providing high quality switched video signals over the fibre optic system.

Bell inaugurated the project with the world's first two-way video conference call between Toronto and London, England, via a fibre optic link to and from earth stations on both sides of the Atlantic.

London, Ontario, is the site of the world's first operational fibre optic cable TV super trunk system using digital TV transmission. The 7.8 km long super trunk cable connects a local TV station to the hub of London Cable TV. The fibre optic cable is less than one centimetre thick and contains eight optical fibres with transmission capacity of 15 TV channels. The system provides for full duplex (two-way) video communications. The \$1.65 million project cost is being shared equally by the federal Department of Communications and BCN Fibre Optic Inc., a consortium of several major Canadian CABLE TV companies. The cable was provided and installed by Canstar Communications.

In a field trial in the province of Manitoba provision of a wide range of new communications, entertainment, educational and social services is under consideration. These include Telidon, fire and burglar alarms, farm management services, on-request video programs, meter reading, polling and auction services, video games, educational TV, pay TV and so on.

Saskatchewan Telecommunications (Sask Tel) will begin construction this autumn on a fibre optic network that will extend cable television and eventually other communications services to more than 50 centres in the province.

The \$56-million, four-year project to install fibres along 3,200 kilometres across the province will connect communities of 500 or more households. A 200-kilometre link between Regina and Yorkton is expected to be completed late next year with the final links ready for service by 1984.

Northern Telecom Canada Ltd. of Montreal has been awarded a \$22-million contract to supply fibre optic cable and equipment.

The Sask Tel system, composed of 12 fibre strands, will initially be able to carry 4,032 simultaneous phone conversations with each strand able to handle 45 million bits of information a second. The system, Sask Tel said, can carry signals up to ten kilometres without being boosted and can carry voice, television and data signals at the same time.

*All figures in this publication are in Canadian dollars unless otherwise specified.

Canadian specialized vehicles

Economically and efficiently transporting people and cargo at home and around the world is one of the things Canada does best.

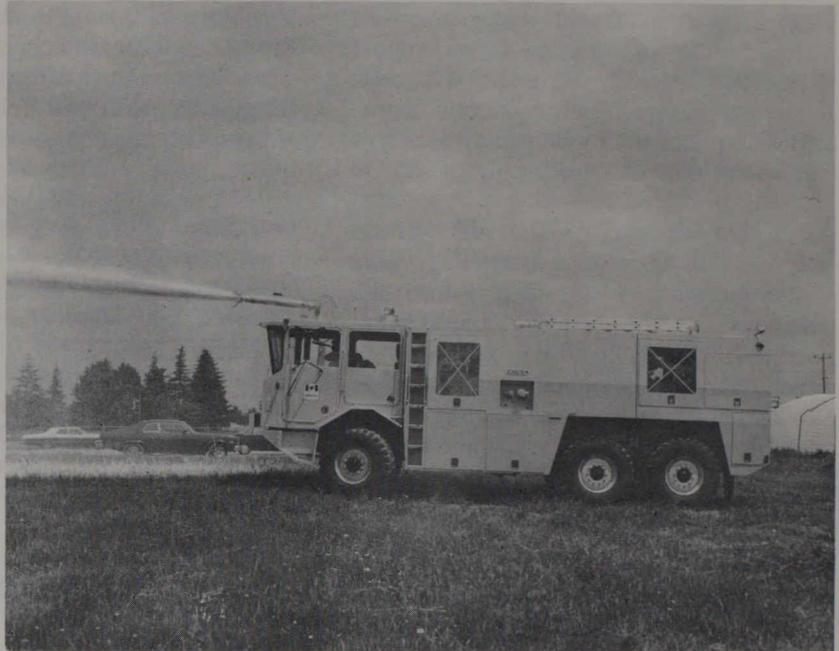
That's why many countries seeking specialized transportation equipment and vehicles call on Canada, where such products are recognized internationally and noted for their versatility, durability and adaptability.

Transportation equipment, systems and components designed and manufactured in Canada are guaranteed to work well anywhere in the world. Many, in fact, are doing just that – and for very good reasons.

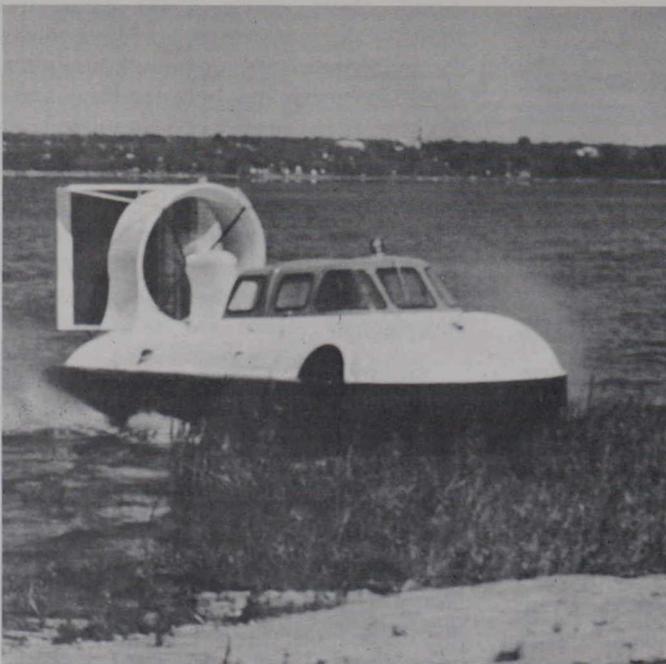
Faced with her own large territory, a diverse terrain, variable weather conditions and temperature extremes of heat and cold, Canada has had to develop transportation systems that operate trouble-free in all types of climate and over all types of terrain.

The expertise acquired from so many years of experience in the field is particularly evident in Canadian-manufactured special transportation vehicles. These range from tracked and terra-tired all terrain vehicles, air cushion vehicles and electric cars to ambulances, air craft refuellers, crash and rescue vehicles, and fire fighting equipment.

Innovative, safe and reliable, and whether for use as prime movers for bulk transport, other heavy duty applications or just for fun, these pieces of equipment are designed with one thing in mind: to do the job and get it done economically and efficiently.



Produced for and delivered to the Indonesian Government, this crash foam truck will provide protection for both aircraft crash and fuel spill fires in Indonesia. It is just one example of the many types of fire fighting units manufactured by King Seagrave Limited of Woodstock, Ontario.



A craft for all seasons

It looks like something from the year 2000, but it's the Odyssey 700 and it's the most advanced hovercraft from Space – Space Hovercraft Limited, an Ottawa, Ontario, firm.

The Odyssey skims over waterways, swamp, open marsh, tundra and sand barrens with equal ease. Passengers enjoy the comfort of a heated cabin in winter and a cool air conditioned interior in summer.

Odyssey is a machine for all seasons and for many reasons. As a good, reliable any-season patrol car, it is used for search and rescue, by personnel in wildlife, forestry and fisheries. During surveys, it's a born to geological, construction and resort management. Maintenance crews in hydro, pipelines, dams, oil fields and field personnel use the craft routinely and to get to otherwise inaccessible places. It is also a dependable vehicle for law enforcement personnel including police, customs and immigration officers and game wardens. The craft travels 56.3 km to 64.4 km an hour, depending on wind and surface conditions.

SED — A High Technology Canadian Company

When a French-made Ariane rocket lifted off from its African launching pad carrying four sub-satellites earlier this year at the site assisting with the launch was a group of Canadian experts.

Meanwhile, in Texas, another group of Canadians is installing agricultural electronic chemical spray monitors for custom sprayers who work the citrus fruit orchards.

Still another group of Canadian researchers is busy in a laboratory turning a videotext system into the multi-use electronic web that could help make the wired world a reality.

Space, agriculture and telecommunications would seem to be an unlikely combination for any one company. But SED Systems Inc. of Saskatoon is not just any company. A high-technology business that has had a 40 per cent growth rate since its incorporation in 1972, it has confounded the experts who first predicted that it could not survive outside Ontario and then said SED's diversification would hurt future development.

SED president Michael Hodson smiles as he recounts advice that SED ignored. He is also quick to point out the main reason for SED's success — the application of brain power.

"The product we use in our business is brains. We don't take anything out of the ground or rivers. We take the raw brains out of universities and technical institutes (and put them to work)."

Employing those brains helped SED to expand from a base in aerospace products to a five-division company that expects to do \$22 million worth of business this year.

SED grew out of the University of Saskatchewan's physics department. In the early 1960s, the space engineering division was formed by Alex Kavadas, whose dream was to start a high-technology business that stressed small group projects. He felt that small groups of specialists would be more efficient and innovative than large groups. The result was a pattern of doing work that has become an SED trademark.

SED has expanded in much the same fashion as a human cell. A small group or cell grows to the point where division is necessary to maintain optimum performance. Then a new division is formed and that, in turn, creates a further new division.

Dr. Kavadas searched world-wide to get the technical expertise needed to make the original cell work. Mr. Hodson, a young electronics engineer, was finally convinced that Saskatoon was not a desolate wasteland and that some exciting opportunities lay ahead.

The excitement was not without its anxious moments, however. The SED team had little financial backing, but made up for it by working extra hard. The fear of not succeeding and being unemployed in Saskatoon added an edge too.

The long hours of work led SED's team into designing rocket payloads and satellite components. The research in aerospace products also started spinoffs that helped lay the base for new divisions. Small earth receiving stations provided an area that grew naturally out of satellite work. SED saw that there was an opportunity to capture the earth station market and it made the quick decisions that small group management allows.

The first buyer was Telesat Canada of Ottawa. Telephone companies and the Canadian Broadcasting Corp. soon followed. Last year, Cable Satellite Network Ltd. ordered 50 earth receiving stations at a cost of \$1-million.

The Canadian Armed Forces are currently looking at a SED earth station network for secure communications in the field.

SED is not simply waiting for the market to develop, however. A second generation of smaller earth stations to go with a new type of communications satellite is already in field trials.

Ten Anik-D satellites are to be launched in 1981 or 1982. They will transmit a much more powerful signal than present satellites do. This will mean that earth stations will not have to have

as much power to pick up the signal.

When Anik-D is launched, SED will have a very good idea of its capabilities. SED's earth stations division has a \$1.8-million contract to help develop the satellite, and Mr. Hodson regards this division as a real growth area.

SED also hopes to take advantage of its position as the only commercial producer of earth receiving stations in the world by leaping into vacant export markets. Australia is considering a communications satellite network to link remote communities and mining developments with major centres and SED has already been on a selling mission to gauge the market potential and equipment requirements.

SED manufactures and assembles all the components of the ground stations except the antenna. To maintain productivity, manufacturing is done on a large scale for earth stations and industrial products.

Once research and development testing is finished on a product, it moves out of the small group on to an assembly line. When the telecommunications division has developed a commercially viable product, it hands over the actual manufacturing to the industrial products division and returns to inventing new products.

The industrial products division's biggest job right now is turning out electronic agricultural instruments. With markets in Europe, Australia and the United States, SED is selling electronic equipment directly to farmers or factories to make farm equipment more productive.

As an electronics specialist, the company finds that its practical products often come out of research done for aerospace projects. SED spends about 12 per cent of its sales funds on research and would spend 20 to 30 per cent if it could afford to do so, Mr. Hodson said.

"The cost of research and development in science and technology is very high and risky. But the only way to grow is to spend on R and D."

The Canadian Teletext System "Telidon" — better than the European competition ?

In the summer of 1979, the Munich study group "MEDIEN VOR ORT" ("Media Scene") gathered information about current communications developments in Canada. In the following article, MVO members Klaus Bodel and Stefan Jedele discuss the Canadian teletext system "Telidon".

For a long time, teletext seemed to be a purely European achievement. The introduction of the British system prompted the French to develop their own technology. Other countries, including the Federal Republic of Germany followed the British example with minor modifications. Developments across the Atlantic were and still are virtually unknown in Europe. Thus the only foreign exhibitors of teletext systems at the Berlin Radio Exhibition were the British and French. Canada, however, developed its own system, "Telidon". The Canadian Department of Communications describes the system it promotes as demonstrably superior to the known European technologies.

At first glance, Telidon appears to be similar to the other systems. The textual material is transmitted to the home TV set either through telephone lines, during the blanking interval of the TV signal, or through cable. For this purpose, television sets are equipped with decoders. An additional modem may be required to connect the TV set to the telephone. The user may select individual pages himself, or he may use tree search to find the information he wants.

The first obvious difference in comparison with other systems lies in the transmission of graphic information. Displayed with European systems, a map of Canada, for example, looks as if it were assembled from small mosaic stones. With Telidon the same map appears on the screen with a resolution that is almost true to the millimetre. The Canadians have developed an alpha-geometric transmission process, while Europeans use the alpha-mosaic approach to graphic information display.

With Prestel, Antiope and Bildschirmtext, the TV screen is divided into a matrix of 40 horizontal and 40 vertical elements. For textual information, each of these 960 areas can hold one letter. For graphical information, each of these areas is subdivided into two horizontal and three vertical elements. Thus for graphics, the screen displays a matrix of 72 horizontal rows and 80 vertical columns. All graphic information has to be composed from this mosaic of 5,760 rectangles. This results in the step-like presentation of pictures and graphics in European systems.

The Canadians have used a different approach. The Communications Research Centre near Ottawa has developed Picture Description Instructions (PDIs), the main advantage in comparison with European systems. Images are stored in the central computer in coded form, i.e. broken down into their geometrical elements: points, lines, arcs, areas and polygons. Images are not transmitted line by line as in European systems, but in a kind of "sign language" composed of geometric shapes. This means not only that much more accurate information appears on the screen, but also that as a rule less network capacity is required.

This better technological solution was made possible through more sophisticated decoders. These are attachments to TV sets and contain so much computer technology that they can be called microcomputers.

But these microcomputers pave the way for a number of other possibilities. Thus individual Telidon users may communicate directly with each other via telephone lines. Telidon also allows the use of different categories of terminals. Even more sophisticated decoders or microcomputers are conceivable which in conjunction with special monitors may display the same graphic information with greater resolution than is possible with conventional TV sets. European systems on the other hand are keyed to only one standard type terminal. With Telidon, signals of the Prestel, Antiope and Bildschirmtext systems can be decoded by means of only slightly modified decoders. The opposite could only be achieved with very considerable additional expenditure. In addition, Telidon videotex terminals can be used as personal and office computers.

Telidon can offer these advantages because this system was developed later than competing European systems. Thus

the Canadians were able to utilize new technology in the computer and electronics sector. But this extra technology has affected the price of the accessory devices. A Telidon decoder built according to the present state of the art would cost about twice as much as a European model. However, the Canadians feel that because of technological developments the price differential will decrease steadily. They hope that it will soon disappear altogether or at least become insignificant.

Canada's system for two-way TV, Telidon, has been chosen over competing European systems for a major U.S. field trial. Ottawa officials say the choice, represents a major breakthrough in their efforts to build an export market that will eventually be worth billions.

The trial of Telidon, developed at the department's laboratories near Ottawa, involves putting modified television sets, adapted to request and receive information from a computer into 60 selected homes or institutions. It is being sponsored by the Corporation for Public Broadcasting and the National Telecommunications and Information Administration, the U.S. agency dealing with telecommunications and computers.

Several prominent organizations will participate by providing information to the system, including the Washington Post, the Washington Star, the D.C. Public Library, the Smithsonian Institution, and the U.S. Energy Department, Federal Information Centre, Federal Trade Commission and Food and Drug Administration.

Canadian companies supplying equipment to Washington are Norpak Ltd. of Pakenham, Ont., and Electro-home Ltd. of Waterloo. Technical assistance is being provided by the Department of Communications and by TVOntario, which is currently conducting its own field trial.

Outdoor Vacations In Canada — 1980

The great outdoors awaits you in Canada, so where should you go and what should you do?

Well, you can hike and camp in Newfoundland, saltwater sport fish off Nova Scotia, sail in the Gulf of St. Lawrence from Prince Edward Island, salmon fish in New Brunswick, play tennis in Quebec, sport fish in Ontario, golf in Manitoba, canoe in Saskatchewan, trail ride in Alberta, river raft in British Columbia, river cruise in the Yukon and take an aerial tour over the north pole in the Northwest Territories.

Here's just a brief sampling of the variety of vacation experiences awaiting you in Canada.

Newfoundland

The first-time visitor to Newfoundland is understandably tempted to tour as much of this beautiful island province as time allows. A camping tour is the ticket for the lovers of the out-of-doors. There are 40 provincially operated camping parks located throughout Newfoundland, plus two national parks (Terra Nova and Gros Morne).

Prince Edward Island

Sail the waters off Prince Edward Island in a 12 m Newfoundland schooner, probably the last of its kind to skim the crests of the gulf waters of the St. Lawrence. Beautiful beaches abound for swimmers.

The appetites, whetted by the salt air at sea, are satiated by lobster dinners ashore in such places as Victoria Harbour in Prince Edward Island, or the scenic shores of the Magdalen Islands.

Nova Scotia

Nova Scotia would be an island province if it weren't for the isthmus which bridges this ocean playground and mainland Canada. There are more than 7 400 km of coastline to enjoy and the swimming facilities are excellent.

Pollock, mackerel and striped bass are the rod and reel favorites, while bottom feeders like haddock, cod and halibut respond to hand lines. Giant bluefin tuna from July to October are the ultimate challenge for saltwater sport-fishermen in Nova Scotia waters.

New Brunswick

The fast running rivers of New Brunswick are world famous for what the gurus of sportfishing confidently claim to be the greatest sport fish that ever rose to a fly — the Atlantic salmon. The province abounds with picturesque farms and pine forests.

Quebec

The vast province of Quebec is noted for a wide variety of outdoor activities and the Quebec Laurentians are famous throughout the world, be it for skiing skating and snowmobiling in winter or golfing, sailing, fishing and swimming in summertime.

Gray Rocks Inn in St-Jovite is now as highly regarded for tennis weeks in summertime as they are noted for learn-to-ski weeks in winter.

Ontario

The wilderness lakes and rivers in the Fort Hope region of Northwestern Ontario are known as Ojibway country. Ojibway country is renowned for its hunting and camping and the sportfishing waters that are equal to the best anywhere in Canada for walleye, speckled trout and northern pike.

Fort Hope is 1½ hours flying time north of Thunder Bay, Ontario and then a bush plane hop from Fort Hope to your choice of camp. There are no roads.

Manitoba

Three of the finest golf courses in all of Canada are located in Manitoba.

Wasagaming is a beautiful 18-hole test in the treed hills of Riding Mountain National Park, 135 km north of Brandon.

The Hecla Island course, 180 km north of Winnipeg, and within hailing distance of the famed Gull Harbour Resort Hotel, together form an ideal holiday atmosphere in a wilderness setting.

Falcon Beach Golf Course, just across the Manitoba-Ontario border in Whiteshell Provincial Park on the Trans-Canada Highway, is a superb introduction to Manitoba.

Manitoba offers a complete cross section of outdoor recreational activities ranging from riding to fishing, but a game of golf is a must.

Saskatchewan

The vast forests of northern Saskatchewan, interlaced with lakes and rivers are internationally famous among sport-fishermen. The fishing lodges beyond La Ronge and the Hanson Lake Road are well known to trophy minded anglers, but this is also canoeing country.

Wilderness anglers, who wish to combine canoeing and fishing on the same trip will delight in this freshwater paradise.



Alberta

The boundary between Alberta and British Columbia is formed by the great divide in the Canadian Rockies, undoubtedly one of the most scenic mountain ranges in the world.

The transition from rolling prairie to the forested ridges and valleys of the foothills, to the cloud-high mountains, offers a variety of terrain and scenery unique to Alberta. This is trail riding country second to none.

There is a wide choice of trail rides, and each and every one would quicken the pulse of a first time dude or a veteran rider.

British Columbia

British Columbia's majestic mountains and alpine rivers are best enjoyed from the deck of a rollicking river raft, or on a carefully planned bicycle tour by road.

Although decidedly different, both are enjoyable and exciting thanks to the overpowering scenery in British Columbia, which is second to none in all of Canada.

Yukon Territory

It is not surprising, especially to a writer, that such poets and celebrated novelists as Robert Service and Jack London were moved to create their famous works here. . . . it's that kind of land.

The main centres in the Yukon Territory are Whitehorse, the capital, and Dawson City the legendary boom town of the Klondike gold rush of '98. In between are 740 km of the historic Yukon River. The cruise from Dawson to Whitehorse against the current takes seven days and six nights.

Northwest Territories

Canada's seemingly endless Northwest Territories are frequently referred to as the world's last frontier.

Technology has made a relatively minimal mark on the high Arctic to date as this demanding environment sets the same rules for the southern visitor as it has done for the native Inuit.

There are now new and unprecedentedly easy ways to experience and enjoy this remote Arctic world. If adventure travel to exotic places is your scene then this is the place for you.

De Havilland gets 55 Dash 8 orders

De Havilland Aircraft of Canada Ltd., Toronto, has received formal commitments from purchasers for 55 of its new mid-sized Dash 8 commuter aircraft representing a sales value of \$400-million, the company has announced.

The commitments, in the form of letters of intent to buy the aircraft and accompanied by deposits, firmly establish the Dash 8 program, which will create an additional 3,000 jobs and bring about plant expansion. The purchasers include four Canadian airlines and two Canadian oil companies.

John Sandford, president, said there has been unprecedented response to the 32-passenger twin-engine Dash 8, which is scheduled to go into service by mid-1984. De Havilland expects to sell 600 of the aircraft by the early 1990s. It is aimed at the growing commuter airline market, particularly in the United States.

The go-ahead on the \$150-million development program was announced in November and the first approach was made to customers two months ago. Included in the total are two Dash 8s ordered by the Ontario Government in April for use by the provincially owned airline, Norontair, operating in the northern part of the province.

Mr. Sandford said expansion will include a new final assembly and testing plant to be located at a second site. This expansion will be in addition to that already under way for the production of the 50-passenger Dash 7, a big brother to the Dash 8, and the smaller 19-seat Twin Otter, of which 800 have now been sold. Sales of the Dash 7 now total 95.

U.S. commuter carriers have taken 36 of the 55 orders for the \$4.5-million airplane, with the largest single order—12 aircraft—placed by Golden Gate Airlines Inc., followed by Pennsylvania Commuter Airlines Inc. with six. Other U.S. purchasers are Southern Jersey Airways, four, Golden West Airlines Inc., Henson Airlines Inc., Ransome Airlines Inc., and Rio Airlines Inc., three each, and Air Oregon, two.

International purchasers are Aerolineas Centrales de Colombia, Brymon Airways of Britain, and South Pacific Island Airways of Samoa with two each.

Low fuel consumption, lower operating costs and the "right size for the growing commuter market" are listed as the key reasons for the interest in the aircraft.

Canadair Aircraft Sales

Canadair Ltd. of Montreal, with advance orders already in hand, is going ahead with production of a stretched version of its successful standard *Challenger* business jet. The company has firm orders and deposits for 40 of the stretched aircraft, known as the *Challenger E*, at \$8.25 million (U.S.) each for a total value of \$330 million. This is in addition to the 126 orders it has received for the standard *Challenger*. Most of the orders on both aircraft are for export markets, with first deliveries of the stretched aircraft scheduled for 1983.

Computers in China

Scintrex Ltd., Downsview, Ontario, which designs and manufactures mineral exploration instruments, has signed a \$1.1-million contract to supply China's ministry of geology with a computer system that will interpret geophysical data obtained by a *DHC-6* Twin Otter aircraft. The aircraft was recently delivered to China under an earlier contract with de Havilland Aircraft of Canada Ltd. and Scintrex, which provided special equipment.

System reduces radiation risk

A revolutionary X-ray system that cuts the amount of radiation to the patient by up to 90 per cent has been developed at St. Joseph's Hospital in Toronto.

Dr. David Hynes, radiologist-in-chief, said the hospital has the first working, low-dose fluoroscopic unit anywhere in the world. He said the present system, which also promises to cut costs substantially, is a prototype "but it works, it is a reality". Dr. Hynes is using it routinely on patients every day.

The cost saving comes primarily through using less X-ray film. The film has become 40 percent more expensive over the past few months because of rising silver prices, increasing costs for a hospital the size of St. Joseph's by some \$80,000 a year.

Dr. Hynes estimated the new system can halve the cost of film used for fluoroscopy, which probably accounts for about one-quarter of all X-ray film used in a big general hospital. When the new system can also be applied to ordinary X-rays the cost saving will be even greater.

Brave New Worlds for Nuclear Medicine

In thirty years, Canada has gone from scratch to becoming the world's largest supplier of medical isotopes and radiotherapy units says John Beddoes who heads up that part of Atomic Energy of Canada Ltd (AECL) which sells medical nuclear technology around the world. Beddoes and his team sell Canadian know-how in three main areas — cancer treatment units, industrial sterilizers and isotopes which can be used for diagnosis.

Cobalt Treatment

Pioneering work by Harold Johns, now at the University of Toronto, made it possible to produce the world's first cobalt treatment unit in 1951. AECL also installed the first commercially produced unit in the same year.

Since that first AECL unit was built in 1951 and installed at the Victoria Hospital in London, Ontario, others have been built and sold around the world. Beddoes estimates that there are about 2,500 cobalt treatment units in operation throughout the world, of which 1,400 were built and installed by the Canadian company. And recently, the 3,000th cobalt source was shipped from Ottawa.

Quite apart from the number of units is the quality of the customer. All the cobalt equipment in the mammoth M.D. Anderson cancer complex in Houston was built by the Radiochemical Company of AECL. In total market terms, AECL probably has about 60 per cent of the world market in this one area and has treatment units operating in 80 countries worldwide.

After getting production of the cobalt treatment units off the ground, AECL started to look around for other uses for the cobalt being produced by the research reactors. AECL also has an agreement with the largest operator of CANDU equipment, Ontario Hydro, that it will buy cobalt from them.

Sterilizing Plants

In the last 20 years, many industrial uses have been developed. The most important of these are large sterilizing plants. Here, equipment destined for sterile use in hospitals and medical centres passes through cobalt units and, in the process, receives doses of radiation which are lethal to bacteria and viruses.

Of 70 large industrial units now in use, AECL has built 48. "Our nearest competitor has built seven, so you get some idea of the lead Canada has here. I think we could claim to have the major market share in over 20 countries," said Beddoes.

Impressive though these figures undoubtedly are, they pale in comparison to what could be a monumental leap forward. Similar sterilizing units using cobalt could change all of our lives and go a long way to easing the world food shortage.

Beddoes warms to the subject as he continues. "The major new application for this industrial technique in the '80s is probably going to be the irradiation of food to stop spoilage.

The World Health Organization estimates that as much as 30 per cent of the world's food is not eaten because it spoils before it gets to the table. So there could be a huge world-wide market for this type of technology — particularly in warm areas of the world where spoilage is a very big problem.

Isotopes

The third major activity of the Radiochemical Company is the shipping of isotopes to customers throughout the world. Here again, Canada is the world's largest supplier — with between 50 and 60 per cent of the global market. "We supply the raw isotopes to manufacturers in various countries who break them down into the 'retail' products which end up in medical units," explained Beddoes.

If there is a problem for AECL in this area, it is one of logistics. Isotopes have very short lifespans. The most widely used one, Molybdenum 99 (Mo 99) has a half life of 67 hours. "So we don't have much time to produce it, assure ourselves it is medically pure and not contaminated by other isotopes, and ship it to all parts of the world."

Most of the isotopes produced for export today are made by reactors. With cyclotrons — particularly the TRIUMF facility in Vancouver — starting up, AECL is gearing up to distribute products from these new units to major markets. Many of these newer isotopes have great medical potential because many of them are less toxic, and can be easily incorporated or attached to other agents. These newer isotopes, when combined with other technology like the brain scanner, are leading to machines undreamed of even 10 years ago.

AECL is collaborating with the Montreal Neurological Institute in the development of a machine that will show investigators not only what a slice across the brain looks like, but what is going on inside that slice. In other words, an incredible new field is opening up which will allow doctors to study the biochemistry of the brain — and, of course, many other organs.

"These newer isotopes are now just beginning to be used in medicine."

Beddoes pauses for another, admittedly smaller moment as he says, "I believe the technology we have here will keep us in the forefront of the medical world."

Hospital uses magnesium for heart attack victims

Heart attack victims at the Ottawa Civic Hospital will be treated with magnesium, a mineral which scientists now believe protects against heart disease and possibly even the mysterious crib death.

Dr. Brian Morton, a cardiac pathologist with the Civic, says patients suffering heart attacks will receive the mineral intravenously in hopes it will minimize damage to the heart muscle and possibly speed recovery.

He said up to 200 patients could be tested in a year-long research project, probably the first of its kind in Canada.

The experiment stems from growing evidence among scientists that an inadequate source of magnesium may contribute to heart disease — the leading cause of death in North America.

Magnesium is found in hard water. Whole grain and liver also provide good sources of the mineral although researchers think many diets may be deficient in essential minerals.

Scientists do think that hard water with its abundance of minerals is connected with a lower incidence of heart disease.

A report by the National Research Council on water hardness and human health research shows the heart disease rate in North America and Britain ranges from 15 to 76 percent higher in soft-water areas compared with hard-water areas.

The Hydrogen Merchants

An international technological race is on to develop the commercial base for hydrogen energy which could eventually see this gas replace hydrocarbons as the fuel which drives the industrial world. Hydrogen is the choice of some experts as the most likely replacement fuel for oil and natural gas, and Canada's unique set of circumstances makes her a potential world leader.

How close is the hydrogen era? In Canada alone, private industry is investing large sums on the production and application of hydrogen. Governments are supportive; so are utility giants like Ontario Hydro and Hydro Quebec. Large research and development programs are operating in the U.S., France, West Germany, Switzerland, Japan and Canada. Hydrogen powered test vehicles are already on the road, and hydrogen aircraft may soon be flying. In ten years, we could see major commercial applications. In 20 years, it is likely that hydrogen energy will be in substantial use.

Professor David Scott, head of the University of Toronto's Mechanical Engineering Department, where a major thrust on Canadian hydrogen research is being initiated, calls the advent of world hydrogen energy "inevitable." He sees the combination of CANDU nuclear reactors with hydrogen as the ideal system to reduce the world's dependence on hydrocarbons.

Professor Scott claims that, "Canada could probably produce hydrogen now at about the same energy equivalent price as current jet aircraft fuel in Europe." Eventually, the conversion of electrical energy to hydrogen energy in a reactor-electrolysis process may exceed 100 per cent in electrical terms — with the deficiency of input energy being supplied in the form of heat; some of this heat could be supplied from the reactor moderator coolant.

Lockheed of California is promoting the formation of an experimental airline to be powered by hydrogen, which the company says should be flying by 1986 if the necessary capital resources — \$1.15 billion are allocated to the project.

The Lockheed proposal involves building four L-1011 aircraft, modified to run on hydrogen, and having them fly freight on a route which would loop through Pittsburgh, Pa.; Birmingham,

England; Frankfurt, West Germany; and Riyadh, Saudi Arabia. If the scheme gets off the ground, a Toronto group, Toronto Air Cargo Terminals, headed by Mrs. Norma Reed, is ready to finance the installation of hydrogen fueling facilities at Toronto International Airport. Willis M. Hawkins, senior vice president of Lockheed for aircraft, calls hydrogen energy a medium "that is very nearly perfect," and he adds that "a hydrogen powered aircraft is potentially the biggest single step in aircraft efficiency that we could take."

The economic and ecological soundness of a gradual world conversion to hydrogen energy to replace the fading hydrocarbon economy and the world's changing primary energy resource base makes the eventual change inevitable. It is not a matter of whether or not we will convert to hydrogen energy; it is a matter of how fast it will happen. That speed, of course, depends on how rapidly the technological developments can be made, and on the proportion of our resources that we wish to expend to effect the transition.

Satellites

Canada is a pioneer in communications satellites.

Telesat Canada, jointly owned by Canadian telecommunications carriers and the federal government, was incorporated in 1969 to establish a commercial system of satellite communications serving all points in the country.

ANIK-A, the world's first domestic synchronous communications satellite system, with three units, was launched in 1972. ANIK-B, a single satellite, was launched in 1978 and ANIK-C, a series of three, will go up in the early 1980s.

Canada's satellites orbit 22,300 miles above the equator and, since their movements are synchronized with the rotation of the earth, they appear to be stationary.

They relay messages—telephonic, telegraphic and digital data—and radio and television programs between their ground stations that serve the vast, thinly populated areas of the North. They have dish antennas nearly 100 feet in diameter. There are also remote earth stations some of which are mobile.

Satellites have become increasingly sophisticated. HERMES, which was the world's most powerful communications satellite, cost \$60 million. It was designed by the Department of Communications Research Centre in 1976 and was intended to have only a two-year life but it lasted

until December 1979. HERMES was the first satellite which could transmit to very small earth stations, some only eighteen inches in diameter. It was used in dozens of experimental programs. In one, medical information, including x-rays and electrocardiograms, was transmitted between London, Ontario, and Moose Factory and Kasechewan in the North. Patients hundreds of miles from hospitals were given complete diagnostic tests.

Canada Aids Kampuchean Recovery

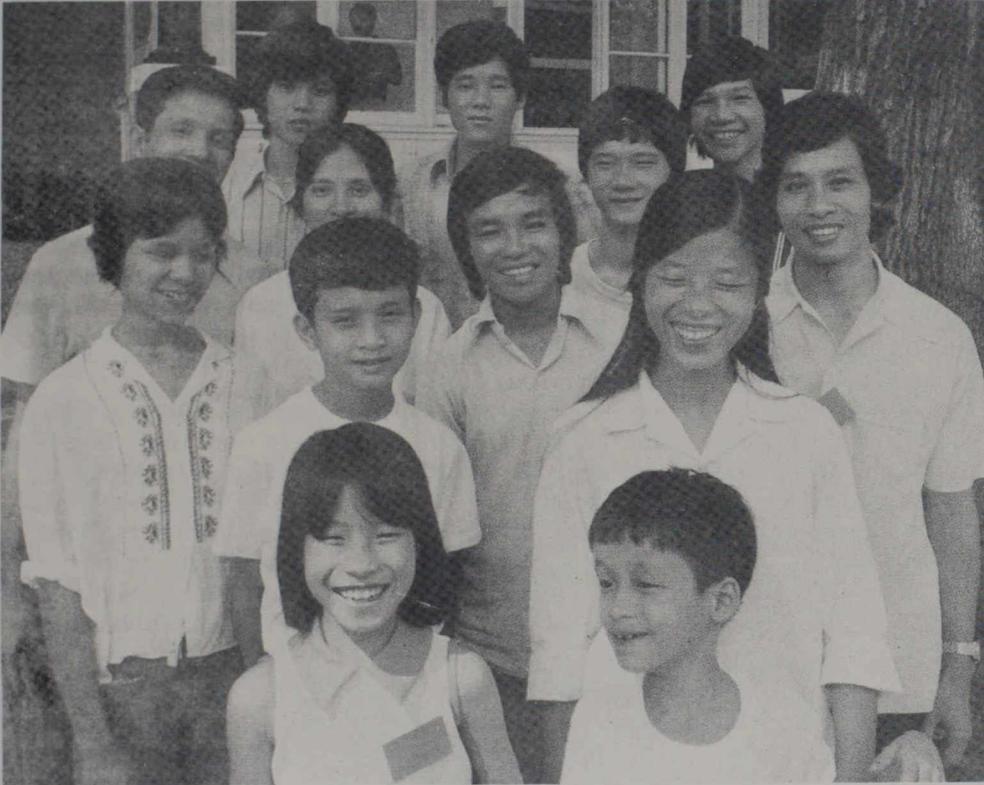
Three Canadian voluntary agencies are at work on recovery and rehabilitation projects to benefit the people of Kampuchea, assisted by \$715,000 in matching contributions from the Canadian government.

The projects involve agriculture, fisheries, education, medical care and cottage industries. They are part of broader programs with a total cost of several millions of dollars that aim at relieving immediate suffering and beginning the long task of reconstructing Kampuchean society. The Canadian contributions, from the funds of the Canadian International Development Agency (CIDA) Non-Governmental Organizations (NGO) Division, will be used for development purposes such as the provision of agricultural supplies and equipment needed as assistance efforts move into the rehabilitation and reconstruction phase.

In addition to these initiatives, many other Canadian volunteers and non-governmental organizations have been working in various ways to help the people affected by Kampuchea's recent problems. The Canadian University Service Overseas (CUSO), for example, has requested a \$300,000 CIDA grant to help finance a \$1.3 million program for the organization and operation of a camp for 15,000 Kampuchean refugees in Thailand.

These private-sector initiatives are in addition to other assistance provided by the Government of Canada through other channels. Canada has provided a \$3 million cash contribution to support the work of the Red Cross and UNICEF in Kampuchea and Thailand, and has supplied \$2 million worth of food aid (rapeseed oil). An additional pledge of \$10 million in Canadian assistance was made November 5, 1979 at the special session of the UN General Assembly called to receive commitments of aid for the Kampuchea people.

Refugees To Canada



These refugees who recently arrived in Canada are standing in front of their new house which was provided by The Toronto Sun newspaper.

In late July 1979 Canadian military aircraft began bringing Indochinese boat people from Southeast Asia to Canada. The first one carried 23 to Vancouver, 21 to the Prairies, 140 to Toronto and 32 to Montreal and Ottawa. One baby born en route got off in Vancouver.

Canada has a formal refugee program and since 1945 it has accepted more than 350,000 refugees. The Indochinese refugee program is the largest movement of refugees in Canada's history.

Since 1975 most of the refugees have come from Indo-China. Canada recently increased the quota, and the government now sponsors one Indochinese refugee for every one sponsored privately. Private sponsors must agree in writing to provide necessary food, accommodations, clothing, incidentals and general resettlement help for a full year. The number of Indochinese refugees admitted since 1975 is expected to reach 70,000 by the end of 1980.

Refugees from Vietnam, Cambodia and Laos are processed by Canadian immigration officers in Singapore, Bangkok, Hong Kong and Manila. More than 27,000 refugees from camps in Singapore, Malaysia and Indonesia will have been processed by Canadian officials in Singapore by the end of 1980. Most are boat people, but some fled overland to Thailand. They are now flown by Canadian airlines and the Canadian Department of National Defence to staging centres in Edmonton and Montreal and then, within a week, to their final destinations.

Alberta has given \$1 million to the United Nations High Commissioner for Refugees to help refugee children in Thailand and Malaysia; Ontario will match up to \$500,000 in funds collected in the province by the Red Cross; and Quebec will accept approximately 10,000 of the refugees admitted under the government plan, plus any who arrive in Quebec under private sponsorship. Quebec is also granting \$400 to each private sponsoring group. Vancouver has pledged \$275,000 to help refugees resettle, and Ottawa has a program to assist 4,000. Individuals contribute to the Canadian Refugee Fund, which was recently created by the government as a private charitable organization.

Canada hopes that a family reunification program will enable people in Vietnam to join their Canadian relatives, and the first 25 visas were recently issued.



Canadian officials bid farewell to Vietnamese refugees bound for Canada.

News Briefs

Quebec Referendum

Quebecers have chosen to refuse the Quebec government a mandate to negotiate sovereignty-association. In the referendum held May 20, 2,171,913 (59.5 per cent) voted in favour of the federalists and 1,478,200 (40.5 per cent) supported the proposal of the Parti Quebecois government of Rene Levesque. Eighty-four per cent of the electorate voted in the referendum. A majority of French-speaking Quebecers voted to keep Quebec in the Canadian Confederation.

Export Development Corporation

The Export Development Corporation (EDC) will provide a \$20-million (U.S.) line of credit to support the sale of Canadian railway equipment to Argentina. The loan, to Banco Nacional de Desarrollo (BND), an Argentine government agency, will finance the purchase by Ferrocarriles Argentinos of Canadian goods and services to re-equip and modernize that country's railway system. Emphasis will be placed on rebuilding the railway's locomotive fleet and repairing railway tracks.

The EDC and the Canadian Imperial Bank of Commerce have announced the signing of a \$3,187,500 (U.S.) financing agreement to support the sale of 20 off-highway trucks to Colombia by WABCO Equipment of Canada (WABCO), Paris, Ontario. The sale, to Industrias e Inversiones Samper S.A. (Samper S.A.), Bogota, is for 11 Haulpak 35-ton and nine Haulpak 50-ton dumptrucks for use in the limestone quarrying operations of Samper S.A.'s new portland cement project near Bogota, Colombia.

The Export Development Corporation and the Bank of Montreal recently announced the conclusion of a \$3.5-million financing agreement to support the \$4.1-million (U.S.) sale of electrical transmission equipment to Brazil by Canadian General Electric Co. Ltd., Toronto, Ontario and Dominion Engineering Co. Ltd., Peterborough, Ontario. The sale, to Furnas Centrais Eletricas S.A. (Furnas) is for the supply and assembly of six shunt reactors at the giant Itaipu power project on the Parana River, on the Brazil-Paraguay border. This is the third EDC-financed sale to Furnas, one of Brazil's major power utilities. The two previous loans totalled \$17 million.

The Federal Cabinet has authorized the EDC to lend Jamaica Railway Corporation up to \$3 million (U.S.) to finance a major portion of the purchase of railway equipment and services from Canron Inc. of Toronto, Sydney Steel Corp. of Sydney, Nova Scotia and other Canadian exporters.

Books Presentation

Canadian High Commissioner to Singapore Mr. L. Michael Berry recently presented a collection of Canadian books to the Singapore National Library. The Minister of State for Communications Mr. Sidek bin Saniff accepted the collection on behalf of the Library. The books covered a wide range of subjects on Canada — history, art, poetry, literature, sports, and children's books including one by Singapore born author John Lim.

Sales to Saudi Arabia

Mitel Corporation of Ottawa has signed a \$2.5 million contract with Telecom SARL, a division of Al Bassam International of Saudi Arabia, to supply superswitch electronic equipment to Saudi Arabia during the next year.

Steel Deal

Steel mill equipment and engineering services to the value of \$11 million are being provided by Ferrco Engineering, Whitby, Ontario, and various Canadian suppliers to Sheerness Steel Company Limited, Sheerness, England. This will cover modernization of the company's bar and rod mill, and on completion increase the mill's annual capacity by 175,000 tons to 600,000 tons. A financing agreement with the Whitby company covering the whole amount has been signed by the Canadian Export Development Corporation (EDC) — the third involving EDC and the Sheerness Steel Company.

CIDA in Peru

The Canadian International Development Agency, has provided \$249,000 towards a project preparation study of a bulk material handling facility at the Pacific port of Matarani, Peru. The government of Peru will invest \$250 million in the project of which a large percentage of the sourcing is expected to be made in Canada.

The study which has been requested by the government of Peru will be undertaken by the firm of H.A. Simons Overseas Ltd. of Vancouver for the Peruvian state mining corporation, Mineroperu. It will be funded from the Industrial Cooperation Division of CIDA which administers the recently announced Canadian Project Preparation Facility (CPPF).

NFB film wins Oscar

For the third consecutive year the National Film Board of Canada has won the coveted Oscar in the best animated short film category from the American Academy of Motion Picture Arts and Sciences.

Every Child, directed by Eugene Fedorenko and produced by Derek Lamb, is Canada's contribution to an hour-long UNICEF production made in celebration of the International Year of the Child. The film illustrates one of the ten "Principles of the Declaration of the Rights of the Child", namely that every child is entitled to a name and a nationality.

Every Child was one of four National Film Board films nominated for academy awards. The other nominations were *Bravery in the Field* (live-action short), *Going the Distance* (documentary feature) and *Nails* documentary short subject).

This year's recognition from the Academy follows on a series of recent successes: *I'll Find a Way*, won the award in 1978 for best animated short; and *Sand Castle* received an Oscar for best short subject animation. In 1979, *Special Delivery* won the award for best animated short.

FOR F
ON
PUBLICA
THE CANA
230

