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Diversity aids exports of Canadian machinery and equipment

The diversity and proven capability of the Canadian machinery industry has helped achieve growth in production as a result of sales both in the domestic and export markets.

The "machinery sector" in Canada consists of some 2 000 companies, fulfilling the demands of the nation's resource, processing, manufacturing and service industries. The expertise gained in meeting the domestic demands has resulted in increased shipments of machinery and equipment to world markets.

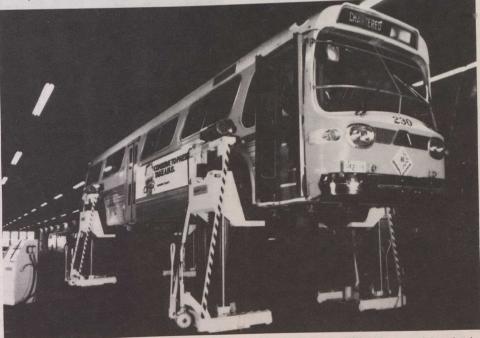
At present there are about 140 000 men and women employed in the industry, with companies ranging from small firms with fewer than 100 workers, to major firms that rank with the industrial leaders in Canada.

The pattern of the industry is one of steady and continuing growth. Gaining

its strength as a result of Canada's war efforts in the 1940s and the resulting need to rebuild European production capabilities, the industry had maintained Second World War and post-war momentum during the ensuing years but, like most industries the past couple of years, has been affected by the world-wide economic downturn.

In 1938, domestic machinery shipments totalled only \$60 million; by 1950 shipments had increased to some \$460 million; and by 1981 production of Canadian machinery and equipment had reached an estimated volume of \$10.8 billion.

Between 1965 and 1980 machinery industry production increased from \$1.8 billion to \$9.7 billion, a real average growth of close to 5 per cent a year. Export trade has been the fastest growing component of this production increasing from \$400 million to \$4.3 billion or 9 per



A new vehicle servicing facility that continues to gain international recognition is the Transpo-Lift system designed and manufactured by a firm in Winnipeg, Manitoba. More than 200 units are now operating in North and South America. The system is designed to facilitate the repair or maintenance of any vehicle chassis and eliminate the need for below-floor pits or fixed vehicle lifts.



Eleven Canadian companies will take part in the Pakex 83 exhibition of packaging machinery and equipment to be held in Birmingham, England, April 25-29. These firms, leaders in their field, represent a broad cross-section of the packaging industries, and their products cover a wide range from labellers through carton sealers to bar code inspectors of pharmaceuticals.

The companies displaying their wares at the exhibition will be: Arpeco Engineering Limited, Mississauga, Ontario; Associated Packaging Equipment Corporation, Markham, Ontario; Delamere and Williams Company Limited, Toronto, Ontario; Hauser Machinery Limited, Scarborough, Ontario; Ideal Equipment Company Limited, Montreal, Quebec; H.J. Langen and Sons Limited, Mississauga, Ontario; Longford Equipment International Limited, Scarborough, Ontario; Rotoflex International Incorporated, Mississauga, Ontario; Stackpole Machinery Company, Scarborough; and Western Packaging Systems Limited, Richmond, British Columbia.

cent annually in real terms during the same period. While in 1965, 20 per cent of domestic production was exported, by 1981 this proportion had risen to close to 40 per cent.

Products

The varied range of capital goods produced by the machinery industry fall into three broad categories on the basis of its industrial end-uses:

- resource-based machinery, including agricultural, forestry, mining, power generation and construction equipment;
- plant and industrial machinery such as textile, plastics, rubberworking, packaging, etc. and general purpose industrial machinery including valves, compressors and materials handling equipment; and
- service industries machinery including commercial refrigeration and air conditioning equipment, heating equipment, food preparation and garage and service station equipment.

The resource and industrial sectors provide by far the greatest market for Canadian-made machinery and equipment. Of the industry's total production approximately 35 per cent consisted of resource-based machinery and about 40 per cent was for plant and industrial purposes. The remaining 25 per cent was for service industry machinery.

In order to remain competitive in markets characterized by a wide range of demands and a large number of suppliers, many machinery companies have gradually specialized their production and concentrated on custom-engineered equipment and certain types and sizes of standard machinery.

Specialization has, in a number of cases, been achieved through rationalization agreements whereby a Canadian subsidiary produces a line of machinery for the corporate group while rounding out its product lines with imports from

the parent organization. In other cases, companies have developed unique equipment capabilities which they have been able to market successfully in Canada and abroad.

Machinery industry activity is more heavily concentrated in central Canada, especially in parts of the provinces of Ontario and Quebec, than is the case for manufacturing industries as a whole. This is probably because the sector is relatively more dependent on large population centres for skilled labour, suppliers of inputs and proximity to most industrial and service industry markets. The histori-



What does a soft-drink bottle have in common with a detergent container? Chances are that moulds for both were made by a company located in Hamilton, Ontario and are now being used by many countries. All moulds are machined twice and engineered to meet the needs of several moulding operations. The extensive experience and reputation for excellent service have won the Canadian firm customers throughout North America, Europe, Africa and Asia.

cal pattern of industrial development in the country — of concentrating secondary manufacturing activities in central Canada — was reflected in the machinery sector.

Nevertheless, many small operations, such as machine shops and tool-and-die makers, are spread throughout the country to meet local requirements. There are also some regional centres of machinery industry activity that have developed close to concentrations of resource-based activities — e.g. agricultural implement production in Manitoba and Saskatchewan; oil and gas equipment in Alberta; fish processing equipment in the Atlantic provinces; and logging and sawmilling equipment in the province of British Columbia on Canada's Pacific coast.

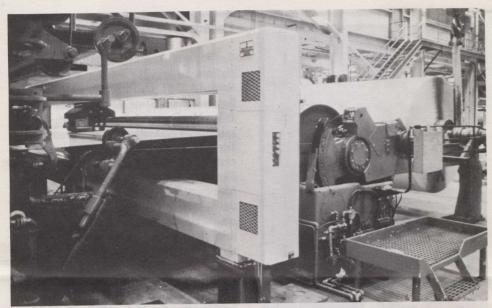
Markets

The predominant characteristic of machinery markets is that they are international. Most industrialized countries have strong machinery producing capabilities and they compete extensively with each other for the broad range of machinery needs characteristic of developed economies. They also compete in third countries with little or no indigenous machinery production capabilities but which are rapidly evolving as important markets for machinery needed by the infrastructure and resource development projects underway.

The Canadian market is typical of that of other industrialized countries in that it encompasses a broad and diverse range of machinery needs. However, the demands for each type and size of machine are much lower in volume than is the case in a number of major machinery producing countries. The total domestic market for machinery and equipment in 1980 was approximately \$16.8 billion. Over-all domestic demand for machinery increased by close to 12 per cent a year in dollar terms from 1965 to 1970, expanding particularly rapidly from 1970 to 1980. even taking into account the large inflationary trends in the last few years.

The United States is Canada's largest machinery market, accounting for approximately 70 per cent of Canada's total exports. These exports are very diverse, covering practically every type of machinery produced in Canada. In addition to such factors as proximity and similarity of standards and business practices, an added stimulus to exports to the US is provided by the close working relationships between parent and subsidiary companies.

Western Europe, together with



Canadian manufacturers of machinery and equipment for the paper products industry have proved their capabilities in world-wide markets. This precision sensor scanner is a totally enclosed unit that assures accuracy and stability under all environmental conditions. It is shown in operation at a boxboard mill in Toronto, Ontario and is typical of Canadian-produced equipment and machinery in use in paper and boxboard mills in many paper-producing countries of the world.

Australia and New Zealand, constitute the second largest market group for Canadian machinery, representing close to 35 per cent of total non-US directed exports of Canadian machinery.

The developing countries present the largest potential for increased sales of Canadian resource-based machinery. Growing world-wide awareness of potential shortages in energy and material resources has stimulated increased interest in speeding up plans for resource development projects and the required infrasstructure in many developing countries (port facilities, roads, etc.). Of major importance in these market areas are such factors as availability of financing from the Export Development Corporation or the Canadian International Development Agency; turnkey capabilities; and consulting and engineering services.

In recent years Canadian machinery firms have participated in a number of large resource development projects overseas such as the Kwidzyn pulp and paper project in Poland; the Gilan forest products complex in Iran; a cement plant in Indonesia; and a steel mill project in Trinidad. (These particular projects represent in total more than \$550 million of Canadian machinery sales.) In addition, Canadian firms have obtained substantial contracts for pipeline compressors, valves and portable drill rigs from the Soviet Union.

The introduction of new types and sizes

of machinery and the development of improved machines generally follows changes in the demand patterns of user industries. Such changes usually occur as the result of trends toward increased automation of industrial processes; the discovery of new uses for various materials; the opening up of new resource areas previously uneconomical to exploit on the basis of existing technology; changing patterns of demand in infrastructures, urban and transportation needs, etc.

Such trends necessitate the development of highly sophisticated equipment and high technology capabilities such as that found in the production of specialized equipment for the nuclear, automotive, aerospace and other technologically advanced sectors. In other areas, the new developments are less dramatic, involving mainly the design of faster, larger and more efficient machines.

In this regard, the Canadian machinery industry has a level of technical competence on a par with the United States and other industrialized countries. This is largely due to ease of access by subsidiaries to the technological developments of their parents and the ability of Canadian-owned firms to adapt to innovations made elsewhere by the acquisition of licences or through developments of their own. Examples of machinery fields where Canadian firms have developed particular competence include forest

industries equipment, industrial gas turbines, nuclear valves and pumps, materials handling equipment for bulk commodities, packaging equipment, certain items of pollution control equipment, and automotive body and frame straightening equipment.

Royal couple visits B.C.

Their Royal Highnesses Queen Elizabeth and Prince Philip were in British Columbia from March 9-12.

The royal yacht, *Britannia*, docked first in Victoria where the Queen and Prince were greeted by more than 15 000 people as they stepped ashore. They were welcomed by British Columbia Premier William Bennett and on behalf of Prime Minister Pierre Trudeau by Senator Jack Austin. The royal couple were introduced by Premier Bennett to members of the Legislature and then taken on a tour of the newly restored 86-year-old building.

The Queen and Prince had lunch with senior citizens and students and later in the afternoon they attended services at a local cathedral where the bells were blessed and dedicated in thanksgiving for the birth of their grandson, Prince William.

The royal couple, accompanied by Prime Minister Trudeau, also travelled to Vancouver where the Queen broadcast an invitation from B.C. Place Stadium to the world to visit Expo 86, the world exhibition to be held in that city in 1986. The message was relayed by Canadian embassies and delegations in more than 100 countries.

The visitors were quests at a gala dinner and reception attended by 400 guests. In a brief speech at the dinner the Queen said, "Nowhere have I seen more determined efforts to restore economic growth than in Canada. Throughout the difficult times, discouragement is not allowed to give way to despair and people have helped each other, growing stronger and more united in the process.... The bedrock of Canada's strength has always been the confidence of its people in each other and in their common future. I share in that confidence and I'm sure that Canada and B.C. will reach new heights of achievement in the years ahead."

On her departure, the Queen said that she had "very much enjoyed" her stay in British Columbia and "was touched by the reception" of residents of the province.

Ontario premier visits Europe

Ontario Premier William Davis travelled to Europe recently to discuss commercial and technical co-operation with officials in France, Belgium and England. It was the first official visit to Europe by an Ontario premier in 20 years.

Mr. Davis began his visit in Paris, February 28, where he met with Prime Minister Pierre Mauroy, Planning Minister Michel Rocard and Trade Minister Michel Jobert with whom he discussed a range of issues in an increasingly diversified trade relationship between France and Ontario.

Mr. Davis also met with representatives of the Renault company and Aérospatiale, a national aviation firm that is part of the Airbus consortium.

The premier held talks with Jean-Jacques Servan-Schreiber, president of the World Centre: Informatics and Human Resources. The centre has signed an understanding with Idea Corporation and the Ontario Institute for Studies in Education. While in Paris, Premier Davis inaugurated Ontario House which has been named an Ontario Delegation.

Speaking before the France-Canada Chamber of Commerce, Mr. Davis named six areas of potential bilateral co-operation: equipment for the extraction and liquefaction of coal, new drilling techniques for mines, industrial robotics, food processing techniques, the automotive and aeronautics fields, and the biotechnology and hydrogen industry.

Premier Davis opened Ontario House, the Ontario Delegation General, in Brussels on March 2. Ontario House is aimed at improving trade and political ties between the province and Europe. The opening was attended by Canadian Ambassador to Belgium D'Iberville Fortier, Canadian Ambassador to the European Commission Richard Tait and Canadian Ambassador to NATO John Halstead.

At a lunch held on the occasion of the opening, Mr. Davis told business and government leaders that his province wanted to increase trade with the European Economic Community (EEC). The premier said that Ontario's high technology industry in particular offered "extraordinary potential for joint ventures with similar companies here in Europe".

The EEC is the province's largest trading partner after the United States. Ontario's exports to the EEC in 1981 totalled \$2.6 billion, nearly a third of



Ontario Premier William Davis

Canadian exports for that year, the last year for which complete figures are available. Imports from the EEC totalled \$2.5 billion in the same period.

While in Brussels, Mr. Davis also held talks with European Commission officials: President of the Commission Gaston Thorn, External Relations Commissioner Wilhelm Haferkamp and Industry Commissioner Étienne Davignon.

Addressing the Canada and Benelux Chambers of Commerce, Mr. Davis spoke of his province's desire to strengthen economic and cultural ties with Europe.

The premier asked the Europeans to provide greater access to their market for Ontario agricultural and industrial products. He also said that he favoured greater co-operation in industry, especially in the field of telecommunications.

"Ontario wishes to become more competitive and not concentrate on the United States market alone. I have come here with this in mind, and I propose that Europe increase its trade with us, not just in one direction but by way of increased co-operation," said Mr. Davis.

Mr. Davis completed his European visit in London, where due to illness a major speech was given on his behalf by Edward Stewart, deputy minister in the premier's office. The speech on economic prospects for Ontario in 1984 was delivered at a banquet attended by businessmen, bankers and industrialists.

While the premier was forced to cancel most of his London appointments because of his illness, he was able to attend a concert given by the Toronto Symphony Orchestra before returning to Canada on March 6. The orchestra was on a one-month tour of seven European countries.

Canada joins African bank

Canada has successfully completed negotiations to join the African Development Bank (AfDB), Deputy Prime Minister and Secretary of State for External Affairs Allan MacEachen has announced.

Canada was officially declared a member on December 30, 1982, and will occupy a seat on the bank's board of directors. Prior to last year the bank membership was open only to independent African countries, and non-resident countries such as Canada were eligible to join the concessional arm of the bank, the African Development Fund.

Canada's share of non-regional capital stock amounts to 9.6 per cent of the total, the same as France, and fourth largest after the United States (17.04 per cent), Japan (14.04 per cent) and West Germany (10.54 per cent). The cash requirement of the Canadian subscription will be \$58.6 million (Cdn), to be paid in five equal annual installments.

Mr. MacEachen pointed out that Canada's objectives would be furthered by membership in the bank, particularly in strengthening ties with Francophone and Commonwealth nations in the region.

Native employment boosted

Employment and Immigration Minister Lloyd Axworthy and Indian and Northern Affairs Minister John Munro have announced that more than \$20 million in federal funds is being allocated for Indian job creation.

This money is expected to create more than 7 500 jobs in upcoming months, many for persons currently receiving welfare benefits. Workers will build and renovate housing, construct new community buildings, and improve the water, sewer and roads in Indian reserves. Social development programs, such as adult education, will also be supported.

"I believe this work will have both immediate and longer-term advantages for Canada's native population and, indirectly, the over-all economy," said Mr. Axworthy. "The work on NEED (New Employment Expansion and Development) projects will lessen welfare dependency, while providing useful and necessary community services and facilities." The funds for native job creation will be drawn from the \$500 million allocated for NEED by the federal Cabinet late last year.

New shopper convenience is in the bag

The days of those irritatingly long lineups at supermarket checkout counters may be numbered.

A Canadian company has produced the first checkout system that automatically makes its own grocery bags and eliminates the need for cashiers to handle them.

The system, called Bag-O-Mat, speeds up ringing in and packing operations by 20 per cent and also provides customers with stronger bags for their purchases. It was developed over a period of five years by H.J. Langen and Sons Limited of Toronto. Several previous attempts by other companies to develop a similar system have failed.

Each Bag-O-Mat checkout station makes its own sacks out of pre-applied adhesive rolls of kraft paper which are stored under the cash register. Activated by a cashier stepping on a foot pedal, the Bag-O-Mat presents a bag on the counter in two seconds in an open position angled toward the cashier for easy loading. Three bags are always ready for positioning ahead of time.

Loaded bags are automatically conveyed to the end of the counter where the shopper picks them up. The Bag-O-Mat holds approximately 1 800 bags at a time which is enough to last a full day without interruption of service but paper rolls can be replaced, if necessary, in less than 30 seconds.



Refilling the Bag-O-Mat's paper supply mechanism, which is hidden under the attractive cabinetry, takes only a few seconds. The Bag-O-Mat is available with or without the computerized scanner for ringing in prices.

In addition to improving service to shoppers, the new checkout counter reduces fatigue for cashiers. Previously they had to open bags, position them and lift them off the counter for shoppers, now they do not even have to look at the bags to fill them. Cashiers can constantly face



The Bag-O-Mat supermarket counter spells an end to cut hands and pulled muscles which are hazards cashiers encounter while opening ordinary grocery bags and lifting them when they are loaded. Bag-O-Mat's inventor H.J. Langen and Sons of Toronto, holds more than 50 patents for the device.

the cash register while filling bags, using only the angle of the counter to guide them, and they can even sit down on the job if they desire.

Ron Langen, president of the company that invented Bag-O-Mat, said that while it saves 20 per cent in checkout time over conventional paper bags, time saved over plastic bags is 40 to 50 per cent.

The new bags are easier to carry because they are 25 per cent stronger than ordinary bags and have a square, seamless bottom — the seams are on the sides which are subjected to less pressure. Another improvement in supermarket service is on the way. The Bag-O-Mat soon will be turning out bags equipped with handles.

Special telephone for disabled

Bell-Northern Research has developed a telephone allowing the physically disabled to have easier access to the telephone network.

The Directel phone, produced after two-and-a-half years' research at Bell-Northern Research in Ottawa, is being offered to Bell Canada customers through the company's Telecommunications Centres for Special Needs in Toronto and Montreal.

The units are designed for anyone who might be unable to pick up and hold a regular handset or dial a call. The final design of the Directel is the result of a series of field trials and input from handicapped individuals and organizations.

Callers blow into a plastic tube or activate special switches on the unit to contact a Bell operator, who completes the call. The customer speaks through a boom-mounted microphone and hears incoming calls on a speaker built into the unit. The tube or switches are also used to answer incoming calls and to end calls. The units can be equipped with a variety of accessory microphones, headphones and pillow speakers to suit the particular needs of a disabled person.

The units are manufactured for Bell by Positron Industries Incorporated of Montreal and sold by the telephone company at $\cos t - \$385$.

Mr. Gauthier said the company estimates it will sell 100 to 150 Directel sets this year. If demand exceeds expectations and larger numbers can be manufactured, the price could come down, according to company officials.

Discovery aids cancer detection

A team of Montreal medical researchers has succeeded in producing antibodies that can detect and identify different types of cancer in humans.

The team was led by Dr. Phil Gold, who is director of the McGill Cancer Centre, a professor of medicine at McGill University and physician-in-chief at Montreal General Hospital. The Montreal physician won the first annual Ernest C. Manning Award for innovation in Canada this fall. Dr. Gold, who won the \$75 000 award for his discovery of carcinoembryonic antigen (CEA) 17 years ago, said he put the funds back into cancer research.

The discovery of CEA made it possible to detect cancer using simple blood tests. If CEA is found in a patient's blood stream, it means that a cancerous tumour is also present. The test for CEA indicates the presence of cancer, but does not show what organ is affected. The newest breakthrough by the McGill cancer research team means that physicians can now detect both cancer and the specific organ involved.



Dr. Phil Gold

Dr. Gold said that it would be a couple of years before the new antibodies would be commercially available. "In the next decade, I hope this leads to new diagnostic and therapeutic treatments we don't have now. With any luck, we are headed in the right direction," Dr. Gold said.

In another development last summer, a team of British Columbia researchers came up with a new way to look at how cancer cells move within the body, with the hope of findings ways to stop cancer from spreading.

Most cancer cells moving out of a tumour are killed by natural body defences within 24 hours but it is the survivors that can mechanically deform and pass through tiny capillaries that spread the cancers. The research team at the University of British Columbia is using a video camera mounted on a powerful microscope to find out which cells are successful.

The UBC team is attempting to determine just how durable a cancer cell can be by advancing research begun in the 1970s at the US National Cancer Institute in Maryland. Using this information, the researchers hope to be able to find ways to make cancer cell walls more fragile.

Canada-US faculty exchange

The United States Information Agency in co-operation with the Canadian government has set up a program to sponsor faculty exchanges between Canadian and US universities and colleges.

The university-to-university affiliation programs between the institutions would allow only exchanges of faculty in political science, economics, environmental sciences and communications.

Grants will cover the cost of travel and modest salary supplements as needed for faculty members being exchanged. The institutions will be expected to continue salary and other benefits to participants. Support will be for a minimum of two and a maximum of three years for a total contribution not to exceed \$50 000 to cover allowable expenses for both partner institutions.

Only accredited, degree-granting US and Canadian universities and colleges are eligible for the program. Both partner institutions must have at least a four-year program.

Priority will be given to affiliations between Canadian and US institutions which: reflect sound academic objectives. careful selection of fields and innovative thrusts in educational exchange; advance the cultural and political understanding of each country about the other; enrich each institution's international program; emphasize quality faculty exchanges; demonstrate clear financial support from the applicant institution and/or from other donors; include written expression of commitment and involvement from the counterpart institutions; and indicate a multiplier effect through outreach activities.

Tourism growth forecast

Increasing consumer confidence in the first half of 1983 should mean renewed growth for Canada's tourism industry, said Minister of State (Small Business and Tourism) William Rompkey.

Last year the industry felt the effects of the recession but to a lesser degree than did other sectors of the economy, said Mr. Rompkey. More than 34 million foreign visitors came to Canada and tourism earned \$3.8 billion in 1982, the same as in 1981. Expenditures by Canadians travelling in Canada are still being added up but they are expected to match the 1981 total of \$12.7 billion. In that year both Canadians and foreign travellers spent an estimated \$16.5 billion in Canada.

The minister said travel industry indicators, including information from the travel agents, airlines, hotels and operators of events and attractions, show "cautious optimism" about its performance in 1983. He said, overseas markets will show a slight over-all growth over 1982; however, the decline in the number of American visitors should continue. Domestic travel by Canadians is expected to be the major growth area in 1983.

Over the long term, Mr. Rompkey said that Canada's tourism earnings were expected to grow to \$30 billion by 1988 and pointed to a series of major events across the country over the coming years that will help draw large numbers of visitors to Canada.

Newfoundland anniversary

In 1983, Newfoundland will be celebrating the four-hundredth anniversary of the arrival of Sir Humphrey Gilbert. Events this year also include the Universiade '83 World University Games in Edmonton, July 1-11, 1983.

1984 marks the four-hundred-and-fiftieth anniversary of the landing in Canada of Jacques Cartier and extensive celebrations are planned including visits to Canada by some of the world's tall sailing ships.

Future events include Expo '86, the world transportation exposition in Vancouver, and the 1988 Winter Olympic Games which will be staged in Calgary.

Canada's tourism industry consists of more than 100 000 businesses, many of them small and Canadian-owned, that provide work for an estimated 1.1 million Canadians.

News of the arts

Guelph festival attracts international entertainers

The Guelph Spring Festival will bring international performers and Canadian artists together in the southern Ontario city from April 30 to May 22.

The festival will also present the first Canadian production of Britten's powerful church opera, *Curlew River*. From the international scene, Metropolitan Opera soprano Gilda Cruz-Romo returns with pianist Richard Woitach to open the festival on April 30. French pianist Jean-Philippe Collard plays Ravel and Fauré, and with Canadian soprano Rosemarie Landry, songs by Debussy. First prizewinners in the Banff International String Quartet Competition will also give their first performance in Guelph.

The legendary Dave Brubeck offers a memorable evening of jazz while multitalented actor Henry Woolf brings wit and pathos to *Hancock's Last Half Hour*. Britten's biographer Donald Mitchell will offer an introduction to Britten's moving church opera *Curlew River* which stars Metropolitan Opera tenor George Shirley. Mummenschanz brings mime magic, and British conductor John Alldis directs the 500 voices of Choirs in Contact in Haydn's

glorious oratorio, The Creation.

Canadian tenor James McLean and harpist Gianetta Baril will perform at the picturesque Elora Mill Inn. Répercussion, four dynamic voung percussionists from Montreal, offer music from Bach to Québécois folk songs with charm and panache. Tenor Mark DuBois and baritone Mark Pedrotti in concert will sing great melodies from opera to Broadway. The Guelph Chamber Choir presents the world première of a work by Claude Vivier and La Messe Basse by Fauré and Dixit Dominus by Handel with soloists Diane Loeb and Jane MacKenzie. Young violinist Gwen Hoebig and cellist Desmond Hoebig will perform with Orchestra London under Alexis Hauser. Virtuoso pianist Anton Kuerti is joined for the Liebeslieder Waltzes by pianist Patricia Parr and soloists Janet Stubbs, Jane MacKenzie, Mark DuBois and Christopher Cameron in the Beauty of Brahms. Lyrical tenor Glyn Evans and soprano Barbara Collier sing Victorian Parlour Songs in one of the handsome stone churches of Fergus. And there is a dynamic performance by the internationally celebrated Royal Winnipeg Ballet.

Britten's powerful church parable Curlew River also stars Canadian baritones Mark Pedrotti, Gary Relyea and Ingemar Korjus. Music director is Nicholas Goldschmidt and stage director is Bill Glassco. Lighting, costume and set design are by Jim Plaxton, with masks by Felix Mirbt. The male voices of the Elmer Iseler Singers provide the Monks' chorus.

Violin-maker designs world class instruments

In the sublime world of violin-making, James MacCleave stands quietly among the best, reports Alan Adams of the Canadian Press.

Mr. MacCleave's violins have echoed through the concert halls of Europe and North America. The 68-year-old retired school teacher's violins are patterned after those of the Italian masters, but he considers his instruments just a part of a lifelong hobby of working with wood.

It was in 1935 when MacCleave first applied himself to the craft of woodworking. Since then, he has turned out everything from three-piece bedroom suites to guitars and violins in the small shop behind his two-storey house in rural Cumberland County, Nova Scotia where he lives with his wife, Evelyn.

Mr. MacCleave, who relies on word of mouth to sell his instruments, cannot remember how many he has made. But his first one still stands out in his mind.

He was working on a guitar and somehow got the idea of trying a violin. After a few moments of thought, he deciphered the design and primed himself for the task.

"I did not think it would be too hard," he said. "And I figured I did well with what I had to work with."

Spruce for the soundboards and maple for the sides, back, top and neck come from Europe and the ebony for the fingerboard is from Africa.

"I rub every piece and decide from the sound if it is any good," said Mr. MacCleave.

He starts by wedging the sideboards in a frame. While they gradually come to hold the shape of a violin, he carves the back and front pieces. He then glues the pieces together along with the fingerboard and lets the violin set before putting the final touches to it.

It usually takes him 150 hours to complete an instrument.

Catalogue of Canadian composer's work published

The National Library of Canada has published a listing of the works of Canadian composer Alexis Contant with a bibliography, discography and an inventory of the Contant papers.

Montreal-born Alexis Contant was one of the few nineteenth-century Canadian composers who did not go abroad either to study or to pursue his career. According to Helmut Kallmann, who wrote the preface to the catalogue, Contant "became Canada's first composer of the large canvas", writing masses, oratorios, and chamber music, in addition to piano music, songs, and other church music. At the time of his death, Contant had written more large-scale pieces than any other Canadian composer.

Alexis Contant: Catalogue reflects all the information currently available on the life and musical career of Alexis Contant. The 1979 exhibition Alexis Contant: The Composer and His Milieu: 1858-1918 provided much of the impetus for its compilation, but it contains information that has come to light even since then.

Two indexes, one of titles and first



Alexis Contant

lines and one of authors and composers, complete the work.

Alexis Contant: Catalogue can be ordered from the Canadian Government Publishing Centre, Supply and Services Canada, Ottawa, Canada K1A 0S9.

News briefs

The third consecutive increase of the Canadian Imperial Bank of Commerce's leading indicator, together with a marked improvement in the United States' outlook, suggests that an economic recovery is near, the bank has reported. With a gain of 14.4 per cent, deflated residential building permits had the best showing of the five advancing components of the index.

After ten years of racing skier Ken Read has retired from the Canadian Alpine Ski team. The 27-year-old skied on the World Cup circuit for nine years and was the first seed (top 15 starters) for eight years. In that span Read competed in 82 World Cup races and was the first of the "Crazy Canuck" foursome to score a victory in 1975. He collected a total of five World Cup wins. In retiring Read said that the Canadian team had established its credibility. "We have achieved more than anyone would have thought possible," he said. An "A" student, Read will enrol in the University of Western Ontario in London, Ontario this spring where he will finish the fourth and final year of his bachelor of arts degree in economics and political science.

The federal government has appointed a committee of tax practitioners and business representatives to review options for the reform of the federal sales tax system. The 17-member review committee will be chaired by lawyer Wolfe Goodman of Goodman and Carr, Barristers and Solicitors of Toronto.

Northern Telecom Limited plans to increase its net investment in research and development by 18 per cent to about \$285 million in 1983. The corporation plans a 23 per cent increase in its capital spending to more than \$310 million. In 1982, Northern Telecom's net research and development investment was \$241.4 million, 33 per cent higher than in 1981, and equivalent to 8 per cent of the corporation's record \$3.036 billion in consolidated revenues.

Alex Baumann of Sudbury, Ontario won a gold medal in the men's 400-metre individual medley at a recent international short-course swim meet held in Bonn, West Germany. Kathy Bald of Ottawa took two silver medals in the 100-metre breast stroke and 200-metre breast stroke, while Victor Davis of Guelph, Ontario won a silver medal in the men's 200-metre breast stroke.



US Air Force

The Export Development Corporation has signed a \$5-million (US) line-of-credit agreement with Bangkok Bank Limited of Bangkok, Thailand, to support the sale of Canadian goods and services to that country. The line-of-credit agreement will assist Canadian exporters competing for sales in Thailand by providing their buyers with a simple and easily accessible credit facility through Bangkok Bank Limited.

Minister of State (International Trade) Gerald Regan announced recently that Canadian Commercial Corporation has received under an existing three-year US Army contract, follow-on orders worth \$9.6 million (US) for the supply of AN GRC Radio Sets by Canadian Marconi Company. These new orders bring the total contract value so far to over \$29 million (US).

Hermes Electronics Limited of Dartmouth, Nova Scotia has been awarded a \$12.8-million contract to supply the US Navy with AN/SSQ 53B Sonobuoys. Hermes Electronics Limited, a subsidiary of Devtek Corporation, a Canadian owned company, has achieved international recognition as a manufacturer of sophisticated products in the field of submarine detection devices, communications and ocean data systems.

Nine Ontario manufacturers of computer hardware and software recently made a five-day trade mission to London, England. As part of the mission, members participated in a two-day Ontario High-Tech Mini Show held at Ontario House. The mission was organized by the Ontario Ministry of Industry and Trade in response to Britain's movement toward greater use of high technology products.

Canada's Ambassador to the United States Allan Gotlieb (right) presents a gift of a book to Major General F.S. McCartney, Deputy Commanding Officer of the USAF Space Division Headquarters in Los Angeles. The two met in Los Angeles to officially acknowledge the recent opening of the Consulate General's sub-office at the Space Division for the purposes of commercial liaison. To be staffed by the Commercial Division Defence Production Sharing Group, the liaison office will provide Canada with a base for investigating further co-operative projects in the US space program.

Natural Sciences and Engineering Research Council (NSERC) has awarded 50 new research fellowships for tenure in Canadian universities. These fellowships are awarded in competition to recent doctoral graduates in order to expand career opportunities in science and engineering in Canadian universities. University research fellows may hold their award for up to five years. NSERC contributes a maximum of \$29 000 annually towards the cost of each fellow's salary. Fellows also receive research grants to help defray the costs associated with their research projects.

For the first time in 18 years Canadian skaters took two medals at the world figure skating championships held in Helsinki. Barbara Underhill of Oshawa, Ontario and Paul Martini of Woodbridge, Ontario won a bronze in the pairs competition, while in the men's section, Brian Orser of Penatanguishene, Ontario took the third-place medal.

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