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Editorial

It is perhaps fitting that this issue of *Canada Today* should have a strong focus on trade, since improving trade and encouraging the free movement of goods across international borders has been a consistent theme of the new government in Canada.

As the article opposite shows, the federal government has lost no time in backing its philosophical stance with specific legislation. The introduction of the proposed Investment Canada Act marks an important change – both in substance and in style – in Canada's attitude towards foreign investment and the growth of foreign participation within the Canadian economy.

On the back cover of this issue we have listed the key Canadian government contacts within the UK, who are concerned with promoting and furthering trade and investment.

And elsewhere we concentrate on two important areas where Canadian expertise is well established, and where interest among UK readers might reasonably be expected to be particularly high – ie, telecommunications (with an emphasis on cable television and direct satellite broadcasting) and offshore natural resources.

These are industries in which Canada has taken the lead. They are also industries in which Canada

Economy

- Canada makes major gains in competitiveness
- Statistics Canada monitors change

Investment

- Hambros Bank launches Canadian unit trust

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- Canadian ultralight aircraft beginning to take off

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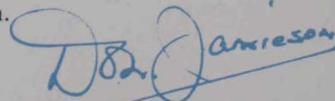
and the UK could work together, to the considerable benefit of both countries.

However, this issue of *Canada Today* is not devoted entirely to trade, as our cover story so clearly indicates. That article delves into the background of the Alex Colville exhibition that will soon be opening at the Canada House Cultural Centre Gallery in Trafalgar Square, London, and it explains some of the philosophy that lies behind some of the paintings that will be on display.

Alex Colville is recognised as one of Canada's most important artists. The exhibition is not to be missed.

This issue of *Canada Today* will be the last during my tenure as High Commissioner. The magazine has changed substantially since my arrival in London and I know these changes have been well received.

I wish to thank you for the support and encouragement received. I know that work will continue in the future to ensure that this High Commission produces lively and informative material on Canada.



Canadian High Commissioner

Proposed act confirms Canada open for business

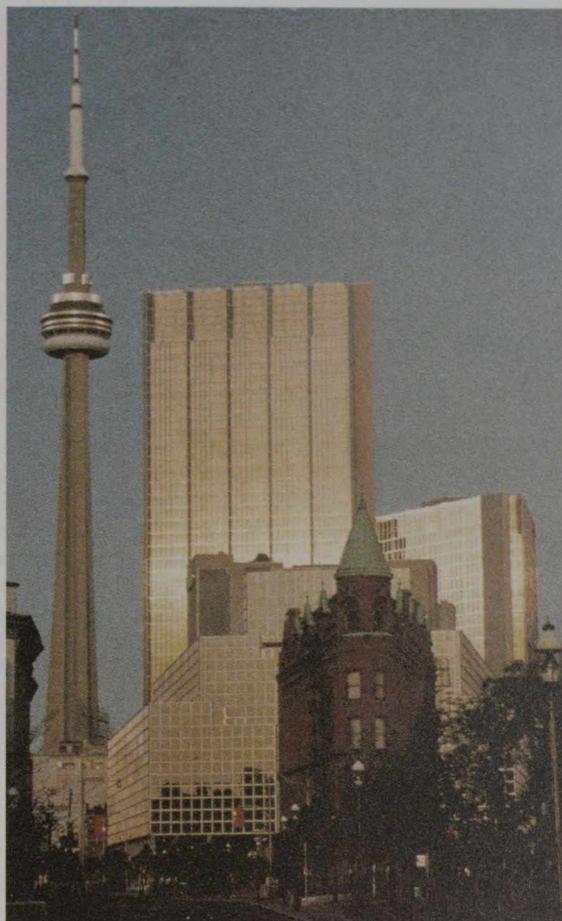
Canada's Conservative government has moved quickly to back up with legislation its theme that 'Canada is open for business'. On December 7 last year, it introduced a bill that would see the Foreign Investment Review Agency (FIRA) replaced by a new and positive agency, called Investment Canada.

The new legislation – tabled by Industry Minister Sinclair Stevens – is expected to be enacted in April following parliamentary hearings. Its overall thrust is established. It is to encourage investment in Canada both by Canadians and by non-Canadians.

'We are going to make it clear,' Stevens said, 'that the Progressive Conservative government welcomes investment in Canada, because investment means jobs.'

The proposed Investment Canada Act (as it is called) will replace the Foreign Investment Review Act, and has been sent after second reading debate to the Standing Committee on Regional Development, where it is receiving a thorough review by members of Parliament. The Committee will also invite witnesses and accept briefs from the public. The Canada/UK Chamber of Commerce is submitting a brief in general support of the Bill.

With the introduction of the new Act, the government is implementing a major element of its policy to encourage investment. 'Investment con-



tributes to economic growth and creates employment opportunities for Canadians,' Stevens said. 'In particular, we believe that international investments or partnerships, where Canadians and non-Canadians work together in Canada and abroad, can bring major benefits for Canada. Such investments are especially attractive, and the Act is based, in part, on this assumption.'

Non-Canadian control of Canadian industries 1971 to 1981 (based on assets)

Sector or industry	1971	1976	1981	1971-1981
	%	%	%	% Change
Agriculture	13	8	4	-9
Mining	62	44	30	-32
Oil and gas	90	79	49	-41
Manufacturing including:	53	47	41	-12
– primary metals	41	15	13	-28
– metal fabricating	42	40	35	-7
– paper and allied industries	46	40	29	-17
– transportation equipment	82	77	69	-13
– chemicals and chemical products	79	73	75	-4
– food	46	38	39	-17
– electrical products	67	69	54	-13
Construction	18	13	11	-7
Utilities and transport	10	8	4	-6
Wholesale trade	33	25	22	-11
Retail trade	22	16	13	-9
Community, business and personal services	23	18	15	-8
Total non-financial industries	37	30	26	-11

Source: CALURA, annual reports from 1972 to 1981

Network of contracts

Investment Canada, in concert with the private sector and provincial governments, will work with the federal trade services in Canada and abroad to encourage investment in Canada. Using a network of contacts and resources in the public and private sectors, the agency will identify investment opportunities and help investors to transform those opportunities into jobs, new technology and real economic growth. These efforts will be a priority for Canada in the UK where prospects for enhanced business cooperation by British business in Canada is high.

The new legislation will also recognise the contribution that small and medium-sized businesses can make in providing employment, establishing new markets and introducing new technology and products. 'Investment Canada will have a special responsibility to encourage this kind of investment,' Stevens said.

The government intends to retain the authority to ensure that major acquisitions by non-Canadians are of net benefit to the economy, but the process by which such acquisitions are reviewed will be dramatically altered. As well, Investment Canada will continue to review important acquisitions, but the total number of investments subject to review will be reduced by about 90 per cent and the process will be faster and simpler.

- Here's what the proposed changes will do
- Establish a new agency, Investment Canada, which will have a mandate to encourage and facilitate investment.
 - Exempt almost all new businesses from re-



Canada's Industry Minister Sinclair Stevens meets UK counterpart Norman Tebbit.

view, and require only a notification of those investments.

- Establish thresholds to limit review to larger acquisitions by non-Canadians, and require only notification of acquisitions below the thresholds. The thresholds for review are
 - direct acquisitions by non-Canadians of businesses in Canada with assets of \$5 million or more; and
 - indirect acquisitions, resulting from the acquisition of parent companies outside Canada, when the Canadian subsidiary acquired has assets of \$50 million or more.
- Provide exceptional authority to review acquisitions below the thresholds, or investments to establish new businesses in culturally sensitive sectors such as book publishing and film production and distribution.

- Provide for timely allowance of investments that are likely to be of net benefit to Canada.
- Provide for a faster and simpler decision-making process by
 - authorizing the Minister to make decisions under the Act; and
 - establishing firm deadlines for decisions under the Act.
- Provide clearer and more effective rules for determining the status of corporations.

'As a result of these changes,' Stevens said, 'Investment Canada will concentrate on job creating investment, on identifying new ideas, technologies and employment opportunities, and on mobilising Canadian skills and resources to improve our international competitiveness.

'We are back in business,' he said. ♦

Telecommunications: Building a reputation as a world leader

Canada is the world's second largest country – 3700 miles wide and 3000 miles high – yet it has a population of just 25 million. As a result, efficient communications linking the country together have always been extremely important.

In recent years, Canada has developed advanced telecommunications technology and systems, which have helped close the gaps of distance and isolation. This article takes a brief look at the Canadian experience in an industry that is becoming increasingly international – and competitive.

Canada has three separate and complementary microwave systems across the country from east to west, as well as a satellite communications network – with more than 100 satellite earth stations and numerous spur microwave links – that connects most Canadian communities.

The country's telephone network, which incorporates more than 18 million phones, is rapidly converting to the digital mode so that it can take full advantage of the reliability and efficiency of this new technology. Canadian telephones in service now number more than 75 per 100 population, making Canada number four in the world in terms of number of phones per capita.

Three geostationary satellites provide effective and reliable communication services to the entire country, reaching the most remote areas of northern Canada. The challenge to meet the needs of rural subscribers has also been met by the employment of VHF, UHF and microwave technology in areas where the traditional wireline telephone service cannot be extended economically.

In addition, Canada operates one of the world's largest mobile radio systems with some 18000 subscribers.

World reputation

Canada has earned a world reputation for excellence in the supply of telecommunications equip-

ment such as PBXs, data and voice transmission systems and custom integrated circuits for the telephone sector.

Among the most significant of these items are the digital switches, produced for densely populated urban centres as well as for international gateway applications. These switches, plus sophisticated new transmission techniques, will provide the backbone of the Canadian communications network of the future.

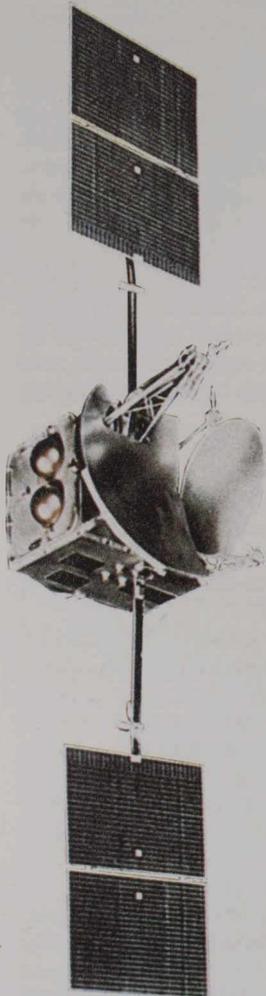
They are reliable and efficient, and they can operate in only a fraction of the space required by earlier electro-mechanical equipment.

Digital switches will also be extended into rural areas, in part through the employment of remote line modules homing onto a parent switcher; this extends sophisticated urban-grade communications services into lightly populated areas up to 50 miles away.

Telephone terminals have gone through a radical series of developments over the last few years, and this evolution will undoubtedly accelerate. Increased use of electronic switchers, and the addition of tone-to-pulse converters to many rotary dial phones, has already speeded up the trend towards all-push-button telephones.

In addition, the replacement of electro-magnetic components with silicon memory chips has led to the development and preliminary trial of electronic telephones, which, in the next few years, will be produced in new shapes and equipped with many new service features.

Canadian-manufactured digital PBXs have also found wide acceptance among businesses, and have been enhanced to provide new features – including data switching – which are of particular value to small and medium-sized firms. Digital switching capability in the near future will further improve the ability of local switchers to perform remote-located switching functions in the business community.





Fibre optics have been in use since 1976.

Fibre optics

Fibre optics have been used in Canadian telecommunications transmission systems since 1976, and many field trials have been undertaken. As a result, Canadian industry has a leading position in this new technology.

One trial now underway covers a residential area of Toronto, where households are being used to show the practicability of simultaneous transmission of telephone, data and television in urban

loop facilities. A similar trial in a rural environment has been carried out in Manitoba.

In addition, a major installation that is to carry more than 20000 voice circuits has been set up in Alberta. And a project that will become one of the world's longest fibre optic broadband systems has been completed in Saskatchewan. It carries 12 video channels, and will eventually reach most major communities in the province, having a cable length of 1800 miles. ♦

Canadian 'firsts' in cable TV and direct satellite broadcasting

The borders between telecommunications and broadcasting are breaking down, particularly in the areas of cable television and direct broadcast satellite.

This month, the Royal Television Society Conference and the 1985 CAST Exhibition will examine both of these new industries (April 16-18, the National Exhibition Centre, Birmingham). Canadian participation will be strong.

The items below outline what Canada has achieved in these fields, showing that it has long been a pioneer with many world 'firsts' to its credit.



ANIK A1: the world's first domestic communications satellite.

Cable television

Cable television was pioneered and developed in Canada

In 1950-51, trials of Rediffusion's North American project in Montreal were successfully completed and a decision was made to construct a coaxial cable network.

Canada was the first country to develop cable television services in a large urban area

By September, 1952, over 200 miles of coaxial cable had been installed in Montreal, capable of serving 58000 homes. The new CBC television service was carried on one channel of the two channel system; films were offered on the other channel.

Canada was the first country to have an operational pay-TV system serving paying subscribers

In February, 1960, Trans Canada Telemeter (owned by Famous Players Corp) distributed feature movies and live productions on three video channels to subscribers in a suburb of Toronto.

Canada is the most highly 'cable wired' country in the world

There are 4.8 million cable subscribers in Canada, representing almost 60% of all households in the country. Almost 75% of households passed by cable are subscribers to cable services. About 550 operating systems provide cable services across Canada.

The three largest cable systems in the world are in Canada

Rogers Cable TV, Toronto, serves 350000 subscribers. Cablevision Nationale Ltee, Montreal,

serves 275000 subscribers, and Vancouver Cablevision, Vancouver, serves 240000 subscribers.

Canada is in the forefront of new cable technology
Interactive cable technology was originally developed in Canada. The city of London, Ontario, has an interactive system with fibre-optic links between the distribution and receiving sites. Rogers Canada has designed a number of interactive 52-channel systems now operating in the US.

Direct satellite broadcasting

Canada was the first country to have a geostationary domestic communications satellite

In 1972, ANIK A1 was launched by Telesat Canada, the world's first domestic communications satellite company. ANIK A1 was the world's first satellite of its kind to use non-tracking earth stations.

Canada was the first country to test the super high frequency 14/12 GHz bands

In 1976, these bands were tested by Hermes, the most powerful non-military satellite in the world.

Canada gave the world its first demonstration of direct broadcasting by satellite (DBS) to earth stations that were small enough to be situated on or near individual homes

This demonstration took place in 1976. Since then, it has spawned an entire industry.

Canada launches the first dual band commercial communications satellite

In 1978, ANIK B tested the 6/4 GHz and 14/12 GHz bands.

Canada pioneered the world's first regular programming by DBS

In 1979, TVOntario began transmitting regular programming via ANIK B. And in 1983, satellites in the ANIK C series were used for the world's first commercial DBS system.

Canada introduced the first commercial satellite system combining voice, data and image telecommunications to be fully integrated with a ground-based network

The system was set up in 1983 to tie in with the Telecom Canada ground-based network. ♦

Almost 60% of all households subscribe to cable TV.



Alex Colville exhibition at Canada House gallery

The Alex Colville exhibition runs at the Canada House Cultural Centre Gallery in London from April 11 to May 7. This exhibition, organised by the Art Gallery of Ontario, includes a selection of ten paintings produced by Alex Colville over the years from 1951 to 1981. A number of preliminary drawings for these works and a wide selection of silkscreen prints will also be on view. Colville is one of Canada's foremost painters of the present day; he also has a special link with Britain in that his paintings are sold through the London gallery, Fischer Fine Art. Because of this commercial connection, his work is known in Britain, but the Canada House exhibition marks the first time that a large selection of his work has been seen in London in a public gallery.

BY DAVID BURNETT

Alex Colville holds a unique place in Canadian art. Through exhibitions, films and the reproduction of his pictures in books and magazines, his images are known to an international audience. Exhibitions of his work – particularly in England and Germany, but also in other parts of Europe, in South America and Israel – have given his art an exposure that has not been equalled by many other Canadian painters.

As an artist, Colville has always insisted on a determinedly independent course. This was clear even when, as a student in the late 1930s and early 1940s, he rejected the then dominant direction in Canadian art – the style of landscape painting developed by the Group of Seven. Also, in the 1950s, when he was developing his personal, mature style, he did so by deliberately turning away from artistic contacts with his contemporaries.

Colville found little to guide him in the tradition of art in Canada, or in the movement towards abstract art that was being undertaken by many artists of his own generation. What he did admire, and still admires today, was the long tradition of western art – from the art of ancient Egypt through the masters of the Italian Renaissance to the great figure painters of the 19th and early 20th century, such as Edouard Manet and Thomas Eakins.

The admiration for the art of the past, and the references to it that he makes in his own work, does not mean that his work is dominated by the dogmatic conservatism or the mawkish nostalgia that marks so much contemporary realist painting in the West. If Colville recognises the great artistic tradition of the past, it is because its achievements remain relevant. The meaning of his work is still rooted in the immediacy of his own world, in the real situations of living and in the circumstances of his own time.

Interests solitary

Colville was born in Toronto on August 24, 1920. His father had emigrated from Scotland as a young man and become an engineer specialising in steel construction, particularly of bridges. The Colville family moved to St Catharines, south of Toronto, in 1927, and then two years later moved to Amherst,

Nova Scotia. Since then, Colville has always lived in the Maritime provinces of Canada's east coast.

Colville's decision to become a professional artist was in many ways a curious one. There was no background or knowledge of the arts in his family, and as a child and teenager he had no opportunity to travel and see original works of art. In retrospect, he considers as crucial to his decision the time in 1929 when he became seriously ill with pneumonia, and was for several days close to death.

This experience and his long recuperation turned him, he believes, from an extroverted to an introverted child. His interests became solitary; he spent his time drawing and making models of airplanes, cars and other machines.

As a teenager, he took drawing and painting classes in his spare time, but when considering a profession, he decided to study law and politics. In 1938, he was accepted by Dalhousie University in Halifax, Nova Scotia.

However, the progress of his art work had been followed by an English painter, Stanley Royle (1888- 1961), who was at that time teaching at Mount Allison University in Sackville, New Brunswick. Royle was enthusiastic about Colville's talent and persuaded him to study art at Mount Allison, arranging a scholarship for him to make this possible.

Colville began his studies at Mount Allison in September, 1938, and graduated from there in the spring of 1942. Immediately, he enlisted in the Canadian Army, hoping to be commissioned as a war artist. This plan, however, did not immediately succeed. He undertook a variety of duties, working his way up through the ranks and receiving an officer's commission in September, 1943.

By then, he had all but abandoned the idea of becoming a war artist, but in May, 1944, with no more than a few hours' notice, he was sent to England and there informed that he had been appointed one of Canada's Official War Artists.

At the end of the war, Colville had an opportunity to visit European museums, in particular the Louvre in Paris where he saw many of the paintings and sculptures he had previously admired in reproductions. He returned to Canada in October, 1945, and worked for several months in Ottawa, making paintings based on the sketches he had done in Europe. He was demobilised from the Army in 1946, and took a teaching post at his *alma mater*, Mount Allison University.

He remained on the staff of the university until 1963, when he decided to devote himself full-time to his painting. This was a calculated risk, for he had a wife and four young children to support. Although by 1958 the demand for his work exceeded his output, it was still very difficult to earn a living in Canada from the sale of pictures. This was particularly true for Colville, because he works slowly; since 1946, he has produced an average of only three or four works a year.

The turning point in his career came with his inclusion in the 1966 Venice Biennale, through which he gained the support of the London art dealer, Dr Harry Fischer. As a result of this



Photo: Larry Ostrom

Dog, Boy, St. John River, 1958, oil and synthetic resin, 60.9×81cm

Study for Night Walk, 21 June 1981, acrylic on black paper, 29.8×21.4cm



Photo: Diane McConnell, Art Gallery of Ontario

relationship, his work became known in England and Germany, and it received increasing attention in Canada.

Careful preparation

The precision of Colville's images reflects the careful technical preparation and presentation of his work. His materials are chosen after scrupulous research into their properties and his method of working is slow and meticulous. His earliest paintings were made with canvas as the support, but since 1946 he has painted on compressed wood panels.

He has changed his painting medium several times. In the 1940s, he used oil, from 1950 to 1958, he used various tempera techniques; during the following five years, he worked with a medium of oil and synthetic resin (except for *Swimmer*, which was done with tempera); and since 1963 he has used acrylic polymer emulsion. The swift drying properties of acrylic particularly suit his painting method of gradually building up the surface with many layers of small close-knit brush strokes.

In 1955, he began to make silkscreen prints, the earliest ones in editions of twenty, and, since 1969, in editions of seventy.

If Colville's method of painting is slow and meticulous, so also is the process of developing an idea that he wants to paint. Many years can separate the first thoughts from the moment he begins work on a picture. Most often, the process comes about through a combination of two separate ideas. This process, and the long period of thought, is exemplified by the painting *Main Street* made in 1979.



Main Street, 1979,
acrylic polymer emulsion,
61×86.2cm

The setting is the main street of Wolfville, the small Nova Scotia town that he has visited regularly since childhood and where he has lived permanently since 1973. In the background is the Wolfville Post Office and the war memorial that was erected after the First World War. Colville made drawings of the war memorial in the 1950s, knowing that somehow he wanted to use it in a painting. But more than twenty years passed before he took up the idea again and realised that the proper way to use it was in combination with the everyday event of shopping.

The painting stands as a metaphor of life and death in the contrast between the monument in the

background and the women loading groceries into the car. It juxtaposes death and sacrifice with continuity and memory – a juxtaposition underlined by the differing role of men and women, and by the destruction of life and life's preservation.

Colville's view of the human condition should not, however, be taken as pessimistic, but rather as realistic. He gives value to those many circumstances and moments when we transcend our fears and anxieties, moments when we feel everything is in order. He shows this often in his paintings and prints, through the relationship between a man and a woman. He shows it also in the painting *Swimmer*.

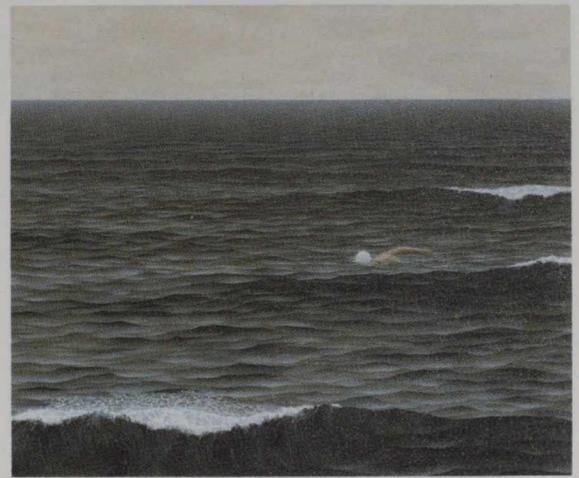


Photo: James Chambers, Toronto

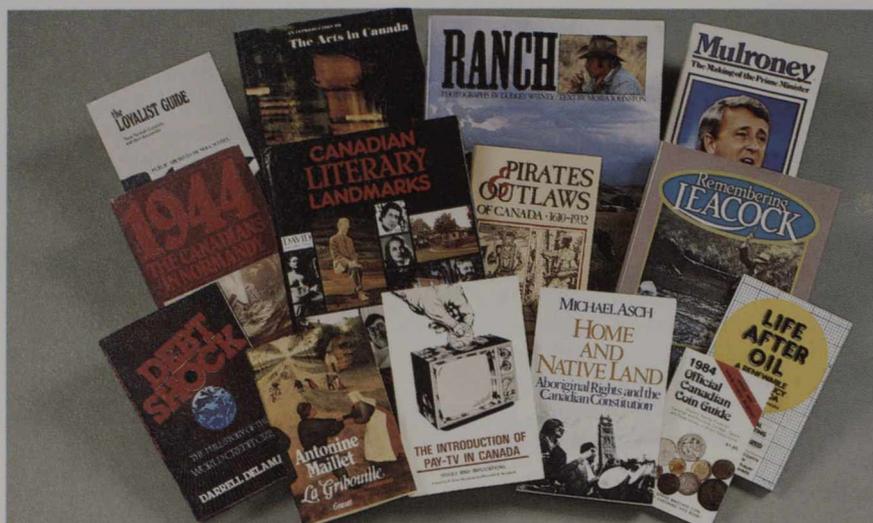
In this picture, the figure is small, overwhelmed by the ocean and all but lost in its dark waves. Yet the swimmer survives by being in control of her actions; her skill allows her to deny conflict with nature and to be in concert with it. At another level, the picture can be read for the way its imagery raises psychological symbolism whether that of the universal symbol of the sea as limitless and timeless; or as a reference to the sea as the literal and mythological source of life; or, on an individual level, as a reference to the sea as amniotic fluid surrounding a foetus. The point in this picture is that there is no single key to its meaning.

The *Swimmer* also touches on two other recurrent aspects in Colville's work his notion of the artist as observer, and the way in which he depicts women. The notion of the special place of the artist as an observer was first, and forceably, made apparent to him in his work as an official war artist. In those circumstances, he was in the curious position of being an observer of events in which he was also a part.

This duality of being a part of, and yet apart from, events has remained a vital aspect in all his work. It can also be related to the distinctions he has made in his depictions of men and women. Colville works from his own experience, and his wife Rhoda is invariably used as the model for the female figure in his pictures. Often, in his works showing two figures, a man and a woman, the man is placed in a secondary and often observing position, whereas the woman is shown as a figure of strength or as someone involved in an action or activity.

continued on page 15

Canadian book publishers turn attention overseas



This month will see a number of events centring around Canadian literature and Canadian authors, as publishers in Canada turn their attention to markets overseas.

The string of events began with a trade mission to the UK, organised by the Association of Canadian Publishers. Its main aims were to give Canadian publishers a greater international profile, to increase export sales of Canadian books, and to bring about a more diffuse distribution of imports into Canada.

Canada's openness to imported cultural products is almost unparalleled. Few countries have borders that are as open to international publishing. The danger is that the economic and marketing strength of other nations that freely export their books to Canada could overpower the home-grown industry.

However, the Canadian publishing industry has become larger, stronger and a lot more sophisticated in the past decade. More than 3000 English-language titles are published each year. And

Canadian writers are increasingly being published in the UK and other overseas markets.

One reason for the growth is that Canadians are avid readers; they have one of the highest per capita expenditures on books in the world. The domestic market for books in Canada is now about \$1127 million – or about \$45 per person per year.

A recent study of Canadian reading habits found that

- 95 percent of English Canadians read in their leisure time; reading is second only to television as a leisure-time pursuit;
- 58 percent of English Canadians had read a book within the last six weeks;
- more women than men read books (64 percent as against 52 percent of men).

The study also found that Canadian men read considerably more non-fiction (46 percent of their reading) than do women (38 percent); but both men and women read significantly more fiction than non-fiction (53 percent for men and 68 percent for women).

What's on offer

This month, UK buyers of Canadian books will be able to see (or hear) what's on offer at three key events

- *The London Book Fair*. This is one of the largest international fairs of its kind, and always attracts a strong contingent from Canada. It will be held at the Barbican Exhibition Centre, April 11–13

- *Writing in Canada Today*. This is a two-day event with discussions on various aspects of Canadian literature and readings by writers from their own work. It will be held at the Commonwealth Institute in London, April 26–27.

- *Display and sale of new Canadian books*. About 500 recent books are being displayed at Soma Books, the bookshop in the Commonwealth Institute. They include fiction, poetry, drama, books on social issues and books for children. The display lasts until April 30. ♦

Below is a list of bookshops in Britain, which normally stock (or will order) Canadian books.

London

Dillon's University Bookshop Ltd,
1 Malet Street, WC1E 7JB. Tel 01-636 1577

Hammick, Sweet and Maxwell,
116 Chancery Lane, WC2. Tel 01-405 5711.

History Book Shop, 2 The Broadway,
Friern Barnet Road, N11 3DU. Tel 01-368 8568

MPB Film Books Ltd, The Motion Picture Bookshop
at the National Film Theatre, South Bank, SE1 8XT.
Tel 01-928 3517

Stobart and Son Ltd, Third Floor-Subscriptions,
67/73 Worship Street, EC2A 2EL. Tel 01-247 0501

J B Tratsart Ltd, 154a Greenford Road,
Harrow, Middx, HA1 3QT. Tel 01-422 8295

Trevor Brown Associates,
26 Charing Cross Road, WC2H 0LN. Tel 01-240 8774

John Menzies' Export Sales Division,
24 Gamble Street. Tel 0602-708021

Edinburgh

James Thin Bookseller,
53–59 South Bridge. Tel 031-556-6743

Iver, Buckinghamshire

Bessie Nicoll Whittard,
19 Syke Ings. Tel 0753-653655

Leeds

Austicks Polytechnic Bookshop,
25 Cookridge Street. Tel 0532-445335

Austicks University Bookshop,
21 Blenheim Terrace. Tel 0532-32446

Warminster, Wiltshire

The Book Company – Wiltshire,
10 East Street. Tel 0985-213565

Yeovil, Somerset

Legal Library Services Ltd.
Thorne House, Eastville. Tel 0935-20807.



Canadian wines pass UK experts' taste-test

According to 45 wine experts, who gathered in London recently for a tasting, Canadian wines are not what they used to be. They're better – a lot better.

The wine experts, all from the UK, were invited to Canada House to taste 27 Ontario wines. The UK experts were linked by a video teleconference arranged by satellite transmission to Canadian wine writers and press in Toronto.

The tasting in London found that the majority of the wines were admirably drinkable. Top prizes went to Estate Chardonnay 1982, Gamay Beaujolais Nouveau 1984, Pinot Noir 1982, Estate Riesling 1983 and Late Harvest Riesling 1983, all produced by Chateau des Charmes

Best of all, perhaps, is that the 45 tasters all agreed that Canadian wines have a lot of potential – a thin compliment, but something that would not have been said a decade ago.

Sheltered from the climate

Canadian wines have, in fact, come a long way since they were first produced more than 100 years ago. In just the last 25 years, the number of wines on offer has increased nearly 400 percent. In 1960, there were just 586 wines on sale; now there are nearly 2500.

Most of these wines come from Ontario and British Columbia in small, specific micro-climates – that is, in small areas that are in some way sheltered from the climatic conditions that would otherwise be too extreme for growing grapes.

Ontario is a classic example. There, a pocket of land on the Niagara Peninsula offers perfect conditions for grape growing. Since it enjoys the moderating influence of Lake Erie and Lake Ontario and is protected from the wind by the Niagara Escarpment. The result is some 24000 acres of prime vineyards.

The climate, of course, is the great variable making or breaking the vintage. An excellent season can be destroyed by heavy rains when the September harvest gets underway.

In British Columbia, vineyards are located in the south and central regions of the Okanagan Valley. The latitudes of the Okanagan Valley are the same as in north-east France and parts of Germany, where the 'grape Château' wines are produced.

The Okanagan Valley has a variety of micro-climates, making possible different types of grapes and wine. Grapes grow from the Kelowna area in the north all the way along the Okanagan Lake to Penticton, and in the southern extremity of the valley, around Oliver and Osoyoos.

In the northern section, grapes are grown in light mountain soil; in the south, they are grown in shale and sand. These different types of soil enable different types of grapes to be grown, which in turn enables the Canadian wine-maker to create different varieties of wine.

Quebec also produces wine, although due to its harsh climate the province's wine producers must depend either on imported crushed grape juice from Europe or Ontario or on grapes grown in Ontario and California.

Vineyards are also located in Nova Scotia in the

Annapolis Valley. Acreage is still low, but interest is being shown in developing a larger grape-growing and wine-producing region.

Superior wines

Good wine begins with good grapes, says the vintner's maxim, since the quality of any wine is determined by the natural ripeness of the grapes. While thousands of varieties exist, only a limited number make superior wines. Of the many different families of grapes, two predominate the vinifera grapes from which almost all European wines are made, and the native North American varieties. Of the several indigenous North American families, the Concord grape of the labrusca species is the best known.



A third group of grapes is the hybrid. There are two principal types the American hybrid, which is crossbred from different North American varieties, and the vinifera hybrid, which is the offspring of the European vinifera and the traditional North American varieties.

The labrusca variety constitutes 50 percent of the grapes used in wine production in Canada, while the hybrid variety makes up 47 percent and the European vinifera 3 percent.



In Canada, grapes are transformed into wine by techniques similar to those used in the other major winemaking regions of the world. The grapes are harvested by hand or machine and are shipped as soon as possible to the winery. After weighing and testing, they are crushed and the juice is fermented on the skins (if red) or alone (if white).

Red wines may also be produced by heating the crushed grapes to extract the colour. The fermentation is then conducted in the absence of the skins. Once the fermentation is complete, the wine is removed from the sediment (and, if red, from the skins) and is then permitted to age before being bottled. ♦

Good wine begins with good grapes

BC's wine industry is based in the Okanagan Valley.

International

Canada has established special fund for Africa

The Canadian government has established a \$50-million special fund for Africa, as well as a number of specific initiatives to help Ethiopia.

The Canadian International Development Agency (CIDA) will be contributing an additional \$3 525 000 in humanitarian relief assistance to Ethiopia through such organisations as the International Committee of the Red Cross, Development and Peace and Oxfam Canada. In addition, CIDA will be providing \$4 million to send between 10 000 and 15 000 more tonnes of cereal to Ethiopia.



Part of the special fund for Africa will be used to match funds raised by voluntary organisations, corporations, municipalities and individuals in Canada for food and medical aid. The formulas will be developed following consultations between the voluntary sector and the country's recently appointed co-ordinator for the African famine, David MacDonald.

In addition, the government is working to promote long-term development. The rural water resources development project, which has already provided safe water for 200 000 people in southern Ethiopia, is being extended at a cost of \$800 000. For Africa as a whole, CIDA, in conjunction with international agricultural research institutes, has approved two projects to improve wheat and bean production, at a total cost of \$6.9 million over five years.

'Food assistance from Canadians has been a critical factor in sustaining life among Ethiopians,' says Secretary of State for External Affairs Joe Clark. 'As

the drought intensified over the last three years, Canadian food aid accounted for almost a third of all food received by Ethiopia.'

On a *per capita* basis, Canadians are the largest donors of food aid in the world. In 1984, Canadian food aid, which reached 30 countries in Africa, amounted to some \$150 million.

'Canadian concern for Ethiopia has been overwhelming,' says Clark. David MacDonald has received many offers of assistance for the people of Ethiopia from across Canada and numerous non-governmental organisations have been active in mobilizing Canadian support.

Clark says that Canada would be redoubling its efforts to stimulate further co-ordination by the various donors who are working to overcome the crisis in Africa. The government has already taken the lead in organising co-ordination meetings on the ground in Ethiopia, and, together with other donors, has urged a greater co-ordination of the food aid emergency programmes in Ethiopia by the United Nations. This has resulted in the appointment of a special UN representative.

'The Canadian government will be reviewing the African situation constantly to determine what further initiatives and extra funds might be necessary to alleviate the situation,' Clark has promised.

Four nations sign satellite agreement

The Canadian government has signed an agreement with the United States, the USSR and France to continue a joint effort using satellites for air and sea rescues.

The agreement, which will be in effect at least until 1990, was signed in Leningrad and announced jointly by the four governments.

Begun as an experiment in 1979, the programme known as Sarsat uses polar orbiting satellites to find lost aircraft and vessels in distress.

Under the new accord, the United States and the USSR will provide two satellites each, while Canada and France will supply instrumentation for the American spacecraft.

One search and rescue satellite can cover the entire earth every 12 hours, while four satellites can cut this time to three hours.

In addition to the satellites, all four countries will co-operate in the programme through surface communication stations and air and sea rescue facilities.

A spokesman for Canada's Mission Control Centre, at Canadian Forces Base Trenton, said the Sarsat programme is 'a tremendous improvement' over the old method of finding lost aircraft and vessels in distress. The Trenton centre co-ordinates the rescues after it receives the information from the satellite by informing search and rescue squadrons. 'Before Sarsat, the only way we would find out about a plane or ship in distress was if a plane passing overhead picked up the signal,' the spokesman said.

Sarsat is credited with saving nearly 300 lives to date.

Mission promotes St Lawrence Seaway

It's more than 25 years since the St Lawrence Seaway was opened, allowing ocean-going vessels to penetrate the North American Continent as far as Toronto, Buffalo, Detroit, Chicago, Thunder Bay and Duluth. Since then, more than one billion tons of cargo, with an estimated value of \$200 billion, has passed through the system.

Now, a Canada-US mission from the Seaway has just completed a tour of Europe in an effort to make the Seaway better known to both shippers and ship owners. The tour started in London, before moving on to Paris, Le Havre, Antwerp, Rotterdam and Hamburg. In each city, the mission gave a formal presentation to about 200 people, representing a wide range of interests within the shipping industry.

The St Lawrence River and the Great Lakes have been used as a water highway to the interior of North America for three centuries. As time and technology progressed, Canadian locks and canals were built to overcome the rapids that prevented all but the smallest vessels from gaining access to the Great Lakes from Montreal.

In 1959, through the cooperative efforts of Canada and the US, the Seaway came into being. To construct it, many bridges had to be raised without interrupting highway or rail traffic. Locks were built, channels dug, power dams constructed, railways, roads and villages relocated, and even a whole new body of water created - Lake St Lawrence.

Technology

Canadian MPs gain access to data banks worldwide

The Canadian Parliament Buildings are being strung with several kilometres of coaxial cable that will soon tune MPs into a high-tech information system.

The \$5.5-million system, expected to be on line this year after two years of development, is called the Office Automation Service Information Systems project, or OASIS.

Using 104-channel television receivers, video-display terminals, high-tech telephones and some specialised software, MPs will be able to tap into data banks worldwide.

Critics say the system will give sitting MPs an advantage at election time by providing them with access to information on a myriad of subjects their opponents won't have. However, the system's mastermind, Robert Desramaux, an energetic bureaucrat who led the OASIS development team, says the advantage won't be significant by the time the next election rolls around.

'There won't be another election for four or five years,' he said in an interview. 'By that time, anyone with a \$500 terminal will be able to tie into any data base. Sitting MPs won't have a great advantage.'

The video service is already in place in most MPs' offices, but because the data system offers such a powerful research and political tool, MPs have agreed not to use the network until it is available to everyone.

Using word processors linked to what Desramaux likes to call 'an information highway' through the five buildings that house them,

the 282 MPs will have access to research material from the Parliamentary Library, news copy from the Canadian Press system or from a television 'clipping' service. (The Canadian Press is the country's national news gathering co-operative.)

MPs will have television sets carrying everything from House of Commons proceedings and live news conferences from the National Press Theatre to updates on committee meetings and flight schedules at Ottawa's airport. The system, a first for Parliament, operates on what's called a Local Area Network. Originally developed for universities and hospitals to transmit data between computers, the network uses cable, optic fibre or other means to connect many users to a common system.

One of the big problems encountered in installing OASIS was the structure of Parliament Hill's buildings. Renovation of the East Block two years ago left space for cables, but most of the buildings retain their marble floors and old-fashioned service facilities. In the Centre Block, drilling rigs were needed to punch holes through solid granite walls 36 centimetres thick.

By the end of this month, MPs will be connected to the data system. Their constituency offices will later be linked to the electronic mail system and some of the other services.

Scientists now linked by international network

Researchers at McGill University in Montreal and at universities across Ontario have recently become connected electronically to their colleagues in 73 colleges and universities in the United States and 59 institutions in ten European countries and Israel.

The Canadian network, called NetNorth has provided exchanges among ten Ontario colleges and universities and McGill for about a year.

The new hook-up allows for the computerised exchange of comment, papers and other matters with members of Bitnet, the US scholarly exchange system started in 1980, and the European network called Earn, which began last summer. The system can be

entered from small computers on the university campuses.

The wider exchanges are being partially subsidised by IBM Canada Ltd.

Negotiations are being made with other Canadian universities to join the network.

World's longest cable links Pacific region

Canada, Hawaii, Fiji, Norfolk Island in the South Pacific Ocean, Australia and New Zealand have now been linked by the world's longest submarine cable. The cable was opened for commercial service between the countries late last year.



The 15 000-kilometre ANZCAN undersea cable, one of the largest telecommunications projects of its kind, is at present capable of carrying 1 380 simultaneous telephone conversations on the one copper and steel conductor. This is made possible by using a technique known as 'multiplexing' which enables more than one signal to be carried on the same transmission path.

In a few years from now, as the demand for circuits increases, the terminal multiplex equipment will be augmented and the system will then carry nearly 2 000 conversations. If still more capacity is needed, another technology, 'circuit multiplication equipment,' can be added, increasing the capacity to nearly 4 000 conversations.

The ANZCAN cable is a \$500-million facility, owned and operated by a consortium of 22 telecommunications carriers including Teleglobe Canada, which is the second largest investor in the system with a 13 percent interest. Canada's contribution includes some \$20 million for processed copper, polyethylene, steel and multiplex equipment for direct use in the system, and about \$40 million for

indirect offsets such as high technology equipment, manufactured materials and semi-processed materials.

The new cable replaces the old Commonwealth cable. It has been in the planning stages since 1978, and is expected to play a major role in expanding the range and quantity of international telecommunication services to countries in the Pacific region.

Some 40 million calls were carried by the older COMPAC cable in the 20-year period from 1963 to 1983. This works out to 6 000 calls per day, or four calls a minute. The ANZCAN cable is expected to handle about 129 000 calls per day, or 90 calls per minute.

The cable system is powered at every land terminal station. In between these stations, 'repeaters' are used to keep the signal up to its proper strength and specifications. Each repeater is housed in a torpedo-like casing and joined to the cable approximately every 7.2 nautical miles. An 'equalizer' was also used while laying the cable for any final adjustments necessary to make sure the signal is just right. In all, the ANZCAN system has 1 124 repeaters and 75 equalizers.

The cable and the repeaters have been engineered to work, undisturbed on the seabed, for 25 years. They are not expected to corrode or break down.

While maintenance of a routine nature will not be required, any unforeseen difficulties will be handled by the maintenance authority for the system. The ANZCAN partners have appointed Teleglobe Canada and the Australian, Fijian and New Zealand cable administrations as members of the authority.

Inauguration ceremonies were held simultaneously in Vancouver, Fiji, Australia, New Zealand and England. Queen Elizabeth II gave a televised inaugural message and Canada's Minister of State for Science and Technology Tom Siddon and Australian Minister of Communications Michael Duffy spoke together in a ceremonial telephone call.

The Canadian ceremony took place in Teleglobe Canada's new Vancouver International Centre in Burnaby, British Columbia. The

centre is linked to the Port Alberni Cable Station, the Canadian landing point of the ANZCAN cable on Vancouver Island, by a microwave network.

New battery could lead to car of the future

Major Tech Industries Inc of Vancouver, British Columbia, has designed a lithium-based battery that it says could lead to the mass production of electric-powered cars.

The battery requires only one-quarter the space of a conventional lead-plated battery, but provides the same energy output.

In addition, a Major Tech subsidiary called Rogers Inter Auto Inc. has developed a new three-wheel convertible and microvan prototype called the *Rascal* designed with electric propulsion in mind.

Major Tech's chairman Murray Pezim is optimistic that the electric-powered *Rascal* will be the car of the future.

'Most electric-car designs have failed due to the short distances travelled before recharging is necessary. Our research has shown that the new lithium-based battery will be able to travel 320 kilometres before recharging,' Pezim says. 'That distance would make the car practical for all commuter needs.'

Although the battery is still at the research and development stage, the company hopes to have a workable electric-car prototype ready for Expo 86.

Cost analysis for the *Rascal* has shown the car could be sold for less than \$5 000, excluding options. Pezim says there are no plans for Major Tech to produce the vehicle itself but he would gladly license production.

Economy

Canada makes major gain in competitiveness sweepstakes

Canada has moved up to seventh place from No. 11 in the international competitiveness sweepstakes, a survey by a Geneva-based economic research organisation indicates.

The annual survey of the European Management Forum, a

non-profit economic research foundation, rated Canada as No. 7 of 28 countries evaluated on such factors as economic dynamism, industrial efficiency, state interference and political stability.

This puts Canada ahead of the United Kingdom, Saudi Arabia, Australia, France and Italy, but behind such economic powers as the United States, Switzerland and Japan (which took the top three places).

'Canada's seventh position represents a remarkable rebound, although it does not quite restore the sixth place the country held two years ago,' said the foundation.

'It is particularly encouraging to see that the gains have been broadly based, as Canada is one of only three countries this year able to improve its score for all of the competitiveness factors.'

The Competitiveness Scoreboard

Rank	Country (Rank last year)	%
1	U.S. (3)	70.97
2	Switzerland (2)	70.91
3	Japan (1)	70.53
4	W. Germany (4)	65.76
5	Denmark (9)	65.12
6	Sweden (5)	63.40
7	Canada (11)	61.39
8	Netherlands (10)	60.81
9	Norway (8)	60.39
10	Finland (6)	58.70
11	Austria (7)	58.26
12	Saudi Arabia*	56.39
13	Belgium/ Luxembourg (13)	56.13
14	UK (14)	55.22
15	New Zealand (18)	52.53
16	Australia (12)	52.12
17	Ireland (16)	50.13
18	Korea *	49.62
19	France (15)	48.83
20	Malaysia *	46.54
21	Italy (17)	45.43
22	Brazil *	43.82
23	Turkey (20)	42.01
24	Spain (19)	41.96
25	India *	39.61
26	Mexico *	38.97
27	Portugal (22)	30.93
28	Greece (21)	30.19

* New to the report in 1985 and so not ranked for 1984. Percentages are computed on the basis that if a country ranked first in all 10 factors it would score 100 percent; if it came last it would score zero.

Statistics Canada monitors change

The federal statistics-gathering agency has acknowledged what many have known for some time. The age of the home perm, black and white television and chrome dinette sets has ended. In its place, according to Statistics Canada, is a new era of microwave ovens, video recorders, contact lenses – and fresh mushrooms.

The agency prices a collection of 325 goods and services in a monthly 'shopping basket' and produces the consumer price index, a widely used measure of inflation. Because people and the times change, the agency periodically revises the contents of the basket, dropping items that have fallen from public favour and adding those that have become popular.

This time, fresh mushrooms and mozzarella cheese were added, while turnips and frozen strawberries were dropped. The cost of day care and automatic dishwasher detergent is now included, while refuse containers, pails and tubs will no longer be surveyed.

Meanwhile, the agency has been able to report that the annual inflation rate in Canada dropped to a 13-year low in 1984, with consumer price increases averaging 4.4 percent. This compares with 5.8 percent in 1983 and the recent record high of 12.5 percent in 1981. The last time price increases were so low was in 1971 when inflation was 2.9 percent.

Investment

Hambros Bank launches Canadian unit trust

Hambros Bank has launched a unit trust to invest in Canada, reflecting their positive view of the policies of the new Conservative government now in power in Ottawa. These policies are generally considered to be pro-business, and they could have a healthy impact on corporate earnings by Canadian companies in 1985 and beyond.

Many stock brokers already see 1985 as being a good year for Canadian stocks. Companies in Canada suffered from the severe

recession of 1979–81, but have now bounced back.

The Canadian economy grew by about 4 per cent last year. Inflation was well under control. There was a huge surplus in the balance of trade. And unemployment has recently shown signs of decline.

The Toronto Stock Exchange index rose sharply in the opening weeks of the year. It closed 1984 at 2400. A number of analysts feel it will reach 2700 in 1985. Others believe it will go as high as 3000.

Industry

Canadian ultralight aircraft now beginning to take off

A new breed of aircraft is increasingly being seen in Canadian skies. It's the ultralight – once just a hang glider with an engine strapped on the front, but now a recognisable type of aircraft that is fast gaining international markets for Canadian designers and popularity among Canadian pilots.

Ultralights constitute a growth industry, with new models being continually introduced. All of the manufacturers in Canada have new designs on their drawing boards, and, aware of the opportunities, new entrants are regularly appearing in the market.

To qualify as an ultralight, a single seater cannot weigh more than 130 kilograms – less than one-quarter of the weight of a conventional small aircraft – and it is this restriction that has thoroughly tested the ingenuity of Canadian designers.

The early ultralights were sometimes little more than flying engines, but recent designs have been more elaborate – incorporating enclosed cockpits, float and ski options, rear-mounted engines, two-seat models and improved aerodynamics.

Also, folding wings for easy storage and transportation (often on the roof of a car) are becoming increasingly common.

However, ultralight flying still brings you face to face with the elements, and that remains at the core of its appeal. So, too, does the ease with which you can get ultralights into the air. Not only are they low cost, but they are

also remarkably free from certification requirements.

Most other aircraft must undergo a rigorous certification programme, but ultralights need only satisfy a simple formula based on wing loading and weight. Also, all a novice pilot needs is a medical certificate, a student pilot's permit, a few lessons from a qualified instructor, and a pass mark on a straight forward Department of Transport examination.

Medicine

Funds for cancer research reach more than \$37 million

The fund-raising drive started four years ago by one-legged runner Terry Fox has raised more than \$37 million for cancer research. Bev Norris, national co-ordinator of the annual Terry Fox run, says the event is expected to have raised about \$3.4 million last year, almost \$250 000 more than in 1983. Fox, who had lost a leg to cancer, reached Thunder Bay, Ontario, on 3 September 1980, before giving up his cross-Canada run when the cancer spread to his lung. He died in June 1981 at age 21.

Immigration

Canada reduces immigration rate

Canada is cutting the number of immigrants who will be allowed to enter the country in 1985, and at the same time is initiating a major review of immigration policy.

Immigration Minister Flora MacDonald has said that Canada will admit between 85 000 and 90 000 immigrants in 1985, down from the 90 000 to 95 000 level that was set for 1984. Unlike previous years, immigration levels are being set for a one-year period only, pending a 'thorough assessment of all factors involved in immigration planning ... to effectively establish immigration levels over the longer term.'

Special emphasis is being placed on attracting business immigrants. In 1983, these immigrants brought \$820 million to Canada and created 4000 jobs for Canadians, the Immigration Department says. The

department stresses, however, that reunification of families remains the top priority. In 1985, for example, it is anticipated that 45 000 immigrants will be applicants seeking to join their families in Canada.

The 1985 level for government-assisted refugees has been increased to 11 000 from the 10 000 identified for 1984.

This figure, however, does not include privately-sponsored refugees for whom no level or quota is set.

Overall, about half the immigrants to Canada in the 1983-84 financial year starting April 1 were from Asia. Ontario was the most popular destination, with nearly 50 percent of all immigrants settling there. Quebec was the next most popular, with about 18 percent, followed by British Columbia, which received 16 percent.

Culture

Animated film exhibition to be held at Canada House

Next month will see the staging of the Animated Film Exhibition, when a rare and valuable collection of original artwork from some 40 animated films goes on display at Canada House.



The exhibition was prepared by the National Film Board of Canada. While in the UK, it is being sponsored by The Canada Life Assurance Company.

The exhibition was the subject of an article in the December, 1984, issue of Canada Today. It opens on May 6.

Novelist wins Malaparte Award
Canadian novelist Saul Bellow has won the 1984 Malaparte Literary Award, sponsored by the Friends of Capri Association. He was selected by an international jury that included authors Alberta Moravia of Italy and Graham Greene of Britain. Bellow is the author of *Herzog*, *Henderson*, *The Rain King* and *Humboldt's Gift*. He has received many other awards including the Nobel Prize in literature in 1976.

Stratford Festival to open May 26



Canada's Stratford Festival will open its 1985 season on May 26 with a gala performance of *King Lear*, last performed there in 1979. The opening week will also include *Twelfth Night* and *Measure for Measure*; *Othello* will join the Festival Theatre repertoire in August. The opening week at the Avon Theatre will feature *My Fair Lady*, the Broadway hit of the 1950s. Other productions scheduled for the Avon Theatre include Goldsmith's 18th century comedy, *She Stoops to Conquer*, and Chekhov's *The Cherry Orchard*.

National Gallery makes important acquisition

The National Gallery of Canada in Ottawa has acquired a preparatory drawing for Benjamin West's *The Death of General Wolfe* (1770), one of the most celebrated paintings in the gallery's collections. The painting depicts General Wolfe's death on Quebec's Plains of Abraham in 1759.

The Study for *The Death of General Wolfe* (1765), believed lost since the end of the nineteenth century, is thought to be of considerable historical importance and of outstanding artistic merit. The preparatory drawing was the last and most important compositional study and the only finished sketch associated with the painting.

The Death of General Wolfe, which is probably the most famous depiction of an event in Canadian history, achieved an almost legendary status from the moment of its first exhibition in London in 1771. The painting was donated to the National Gallery in 1918 by the Duke of Westminster.

The Study for *The Death of General Wolfe* was purchased by the gallery with the assistance of a grant from the government of Canada.



The Death of General Wolfe by Benjamin West, 1738-1820

People

New Agent-General appointed by Ontario

An Ontario government minister, Tom Wells, has been named to represent the province as its next Agent-General in the United Kingdom, taking up the post on April 1. He was Minister of Intergovernmental Affairs and House Leader in the administration which was until recently headed by Premier William Davis.

He replaces W. Ross DeGeer, who completes a tour of duty that began in 1978, and now returns to Toronto to become Chairman of the Ontario Highway Transport Board.

Davis stepped down recently after 13 years as Premier following the Ontario Progressive Conservative Party Leadership convention, at which Frank Miller was chosen as leader.



Tom Wells, Ontario's new Agent-General.

A member of the Provincial Legislature since 1963, Wells has a long and successful record of government service at ministerial level. This includes the portfolios of Health, Social and Family Services, and Education, covering the years from 1969 to 1978, when he was appointed as Minister of Intergovernmental Affairs.

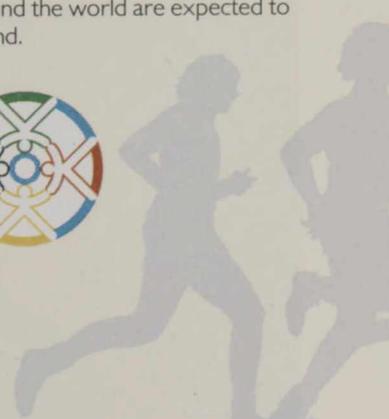
Sport

Masters Games scheduled for Toronto

The biggest meeting of senior athletes ever staged – the Masters Games – will be held in Toronto in August. The games will encompass 22 sports for both men and women.

There will be only three team sports – ice hockey, basketball and cricket. Also, competitors will enter as individuals, not as members of a national team.

About 10 000 athletes from around the world are expected to attend.



Canadian technology gives access to hard-to-find ocean resources

With three oceans washing its shores, and with 152 000 miles of coastline (one of the longest in the world), Canada is very much a maritime nation.

In recent years, it has benefitted greatly from the wealth its oceans contain, and by exporting its skills, ideas and technology, it has shown other maritime countries how they can benefit too.

In the articles below, we feature three areas – offshore oil and gas, ocean-floor minerals, and fishing – where new developments in Canadian ocean technology are beginning to pay big dividends.

In all three areas, the trick is first to *find* the resource in question, and in all three areas, Canadian enterprise is developing new technology which is making the search that much easier.

One-man submarine searches for oil on ocean bottom

Deep in the sea off the Nova Scotia coast, a Canadian-built one-man submarine called *Deep Rover* has been undergoing manned trials. More recently, it has been used to check out volcanic activity near Hawaii and to examine portions of the new ANZCAN underwater cable, before returning to the Nova Scotia coast where it is to be used by Petro-Canada to explore for oil as deep as 800 metres.

Because Petro-Canada wants television pictures, *Deep Rover* will not be cut off from surface contact. Instead, it will be tethered to a platform floating near the surface, and an umbilical cable will carry television signals up from the bottom.

Normally, the *Deep Rover* is propelled along the ocean floor by battery-powered motors, allowing a diver to explore nearly a kilometre under the sea without any link to the surface.

Several problems solved

The *Deep Rover* – the most advanced of deep-ocean research vessels – solves several problems facing

divers who want to work for long periods under more than about 300 metres of water. That is about the practical limit for diving suits, which require bulk to withstand pressures many times greater than surface air pressure.

Pressurised submarines and diving spheres are useful for long dives, but they are ponderous and they do not give divers much chance to study or interact with the things they encounter.

Micro-submarines such as *Deep Rover* offer the advantages of both diving suits and submarines. Manoeuvrable and usable at depths of 1000 metres or more, they can dive quickly and return to the surface without problems of decompression, because the atmosphere inside the bubble is maintained at surface pressure.

Deep Rover has already spent more than 4000 hours underwater, testing the ability of its molded plastic bubble to stay watertight and withstand high pressure. Graham Hawkes, who developed the *Deep Rover* concept, says that, ultimately, it will be possible 'to have comfortable, affordable access to the ocean in a manner as commonplace and accepted as driving an automobile or flying an airplane.'

Robotic arms have delicate touch

The robotic arms at the front of the submarine can move in five ways and the hands can move in four ways, making it possible to do very delicate building tasks and to pick up scientific specimens.

In laboratory tests, the mechanical claws picked up eggs and served glasses of champagne without breakage. The controls are so simple to use and so precise they can make the mechanical arms draw intricate pictures and even sign names.

Deep Rover was built in a joint venture by Can-Dive Services Ltd. of Vancouver and by Hawkes' Deep Ocean Engineering Inc. ♦

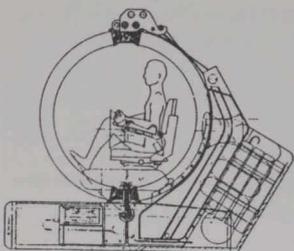
Unmanned torpedo in hunt for minerals

It's long been known that one of the world's largest, untapped sources of minerals is to be found in the 'nodules' that are scattered over the oceans' floors. Now, researchers in Canada have developed an underwater vessel that can be used to search the oceans' floors for these nodules.

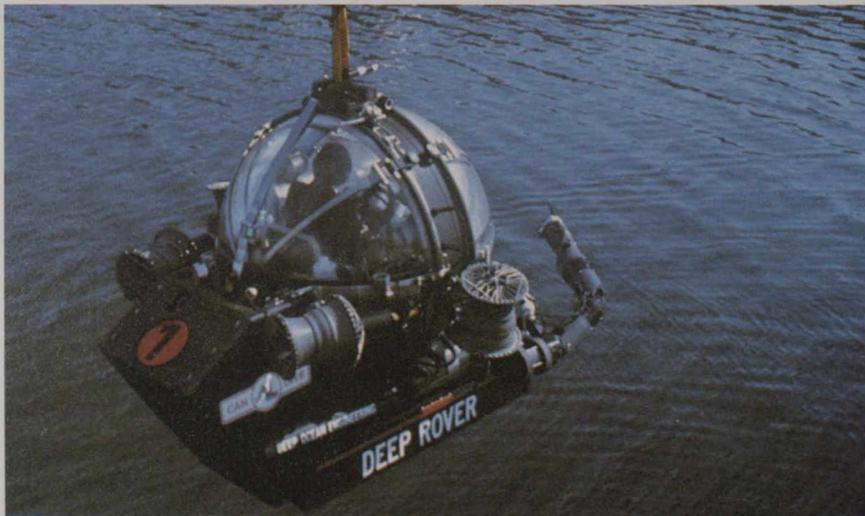
The vessel – an unmanned, torpedo-like machine about ten metres in length and one metre in diameter – can move underwater without any on-going guidance from the surface. That means it can be adapted to serve a number of functions. Searching the sea floor is one. (Another, which is likely to prove just as useful, is inspecting underwater pipelines for leaks and fractures.)

Movements controlled by computer

Most unmanned vessels that serve similar functions have two main drawbacks. They are controlled from the surface by cable (which reduces their freedom of movement); and they require the full-time attention of skilled operators who must guide their every movement.



Deep Rover: exploring the ocean without links to the surface.



The Canadian-designed vessel gets around both these drawbacks, because its movements are controlled by an on-board computer (eliminating the need for vessel-to-surface cables), and the computer can be pre-programmed so that once underwater, the vessel can operate strictly on its own.

The new vessel comes in two versions – the ARC, which can operate up to depths of about 300 metres (it's powered by batteries); and the Dolphin, which operates just a few metres below the surface (it is powered by a diesel engine, with air for the engine being drawn in through a 'snorkel' that sticks up above the waves).

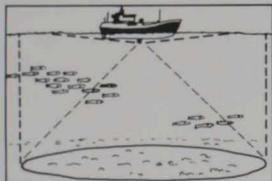
Both versions are being commercially developed by International Submarine Engineering of Vancouver. The company is exploring other uses for the vessel, such as the detection of underwater explosive mines. It is also exploring other markets, particularly overseas.

Fishing sonar has range of more than 6000 metres

Scannar Industries of Cornwall, Ontario, has designed a commercial fishing sonar that it says is a world beater.

Scannar's MAQ (multiple aperture) sonar can detect fish up to 6400 metres in any direction beneath the sea. The schools of fish are pinpointed in vivid blue on a green video screen. At the same time, the lower section of the screen displays a vertical cross-section showing the school's depth.

'Our fishing sonar is the most technologically advanced in the world,' says research director Gene Hill. 'We have both a horizontal and vertical display. The competition shows only the horizontal – there's no vertical. That means they can't tell how big a school is.'



Sonar can detect fish 6400 metres away.

Scannar introduced an advanced MAQ II model with simplified controls ('the difference between automatic transmission and stick shift in a car') last year. It is now working on an even more advanced model, the Multi-MAQ, with longer range and higher resolution.

Aimed at other markets

The Multi-MAQ will be used by the fishing industry, but in addition it will be aimed at the military, scientific and petroleum markets. As Hill says, if a machine can be built that can detect a single herring one kilometre away, then one can be designed that can 'winkle out' submarines and even a torpedo coming at you.'

Hill developed the original MAQ model five years ago, drawing on his experience in radar with the Canadian air force. The MAQ is, in fact, a simplified version of a naval submarine-hunting sonar.

Unique in the commercial fishing world

The MAQ and MAQ II models range from 15 to 90 kiloHertz (the lower the kHz the longer the range but with less resolution) and sell for between \$80,000 (£50,000) and \$200,000 (£125,000).

They can run on any world voltage from 90 to 250 volts and are immune to ship-board electrical interference because the information from the transducer (a periscope in reverse) is transmitted by light signals rather than wires.

The processing time to take and send an underwater 'snapshot' to the display screen is one two-thousandth of a second, four times faster than competitive models. That is important in rough seas and rocky waters.

The heart of the machine is a Hill-designed computer that operates in the MAQ II at 40 MOPS (mega operations per second) or one forty-millionth of a second – 200 times faster than most micro-computers.

Alex Colville exhibition – continued

This relationship is evident in one of his most recent paintings, *Verandah*. The two figures, for which Colville and his wife are the models, sit relaxing on the verandah of a summer home overlooking the sea. But as the man reclines staring out to sea, the woman reads the newspaper – a contrast between the woman engaged with the immediate events of the world and the man disengaged from them.

However, this distinction between the two figures is reconciled in two ways. First, both sit within the enclosure of their verandah – a reference to their sharing a home and their lives. Second, they are placed between two aspects of the non-human world – the sea reaching across in front of them; and behind them the sleeping dog stretched out across the picture plane forming a link between the two figures.

By these few and simple means, the picture exists as a metaphor for so many levels of the relationships that exist in our lives – the emotional basis of the familial love between a man and a

woman; the practical social structure of the family in establishing a common home; the complex relationship between human existence and the natural world; the distinctions within human life between the active engagement with the everyday events of living and the contemplative withdrawal from activity.

As a teacher, and by the example of his work, Colville has had a considerable influence over other artists. He has not sought followers, rather they have been drawn to him; and this has led to the mistaken notion in the minds of some people that he is a regional artist – that is, one whose primary concerns reflect the life and environment of a particular locality.

The regional, realist school of painting tends to be photographic in approach and nostalgic in mood. Colville's work is neither. He uses the people and surroundings he knows best because that is his reality, but the character of his work and its complexity in layers of meaning are universal.



Elm tree at Horton Landing, 1956, oil emulsion, 121.9 x 91.4 cm

Photo: Larry Ostrom, Art Gallery of Ontario

Where to get help with trade enquiries



Plug into Canada: Government offices in the UK can help set up trade connections

One way to find out about investment and trade opportunities with Canada is through the Canadian government trade commissioners in embassies, consulates and high commissions around the world.

In the UK, the Commercial/Economic Division of the Canadian High Commission in London and the Canadian Consulate General in Glasgow offer practical assistance by

- providing detailed information to UK business on sources of supply for Canadian products, services and technologies;
- informing Canadian companies of commercial prospects and market conditions in the United Kingdom;
- putting Canadian companies seeking product representation in Britain in touch with UK agents and importers;
- organising visits to Canada for British business-

men to meet with suppliers or to explore direct investment in Canada;

- putting Canadian and British manufacturers in touch with each other for sub-contracting or manufacturing under licence arrangements;
- assisting agents and distributors of Canadian products with display, merchandising aids, shows and seminars to promote sales of Canadian products in the UK;
- supporting the travel industry in marketing tourism in Canada;
- seeking out UK firms and counselling them on direct investment in Canada;
- encouraging the supply of Canadian goods and services to other countries, by putting Canadian firms in contact with financial, engineering and international project development companies located in Britain;
- promoting UK-Canada collaboration in the fields of science and technology.

Key trade and investment contacts within the Canadian government in Britain

London

Canadian High Commission
Macdonald House
1 Grosvenor Square
London W1X 0AB
Tel 01 629 9492
Telex 261592 (CDALDN G)



Sketch: Malcolm SurrIDGE

Minister (Commercial/Economic)
L. James Taylor

General enquiries
Carol Fox, Commercial Librarian

Agriculture, Fisheries, Resources and Related Products

John A Dawson, Counsellor (Commercial)
Agriculture, fisheries, resources, machinery, equipment and services.

R Bruce Gourlay, Counsellor
(Forest Products)

George D Cooper, Commercial Officer
(Agriculture and Fisheries)

Basil M Fillmore, Commercial Officer
(Agriculture)

Cyril I Rooke, Commercial Officer
(Forest and Building Products)

Kenneth P Scott, Commercial Officer
(Metals, Minerals and Energy)

Science, Technology and Environment

Donald Crosby, Counsellor (Science)

Manufactures, Defence, International Finance and Third Country Operations

Colin Russel, Counsellor (Commercial)
International project development, consulting services, equipment supply, financing and other operations in third country markets.

Ed Gorn, Counsellor (Commercial)
Aerospace, defence industries, equipment services

David Dix, Counsellor (Commercial)
Industrial development and client investment in Canada

John Mercer, Commercial Officer
(Manufactured Products)

George Edwards, Commercial Officer
(High Technology Products)

Commercial Policy and Economic Relations

Economic affairs, trading environment and market access, financial services, transportation, international commodity agreements.

Roger Ferland, Counsellor
(Commercial/Economic)

Nancy Stiles, Counsellor
(Economic)

Sheila Nelles, Counsellor
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Russell Merifield, First Secretary
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Frank Galipeau, Counsellor (Commercial)
Marketing and communications

Paul Scoffield, First Secretary (Commercial)
Holiday Travel and trade promotion

Michael Alexander, First Secretary (Commercial)
Meetings and incentive Travel, research programmes

Cynthia Alcantra, Tourism Officer
Special promotions to the trade

John Munro, Tourism Officer
Research, meetings and incentive travel

Glasgow

Canadian Consulate General
Ashley House
195 West George Street
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Tel 041 248 3026

All trade enquiries relating to Scotland and Northern Ireland

Wes Huxtable, Consul and Trade Commissioner

Bob Banks, Commercial Officer

Sketch: Max Pemberton

Front Cover

Verandah by Alex Colville, 1983, acrylic polymer emulsion, 80x80cm

Photo: Mira Godard Gallery, Toronto