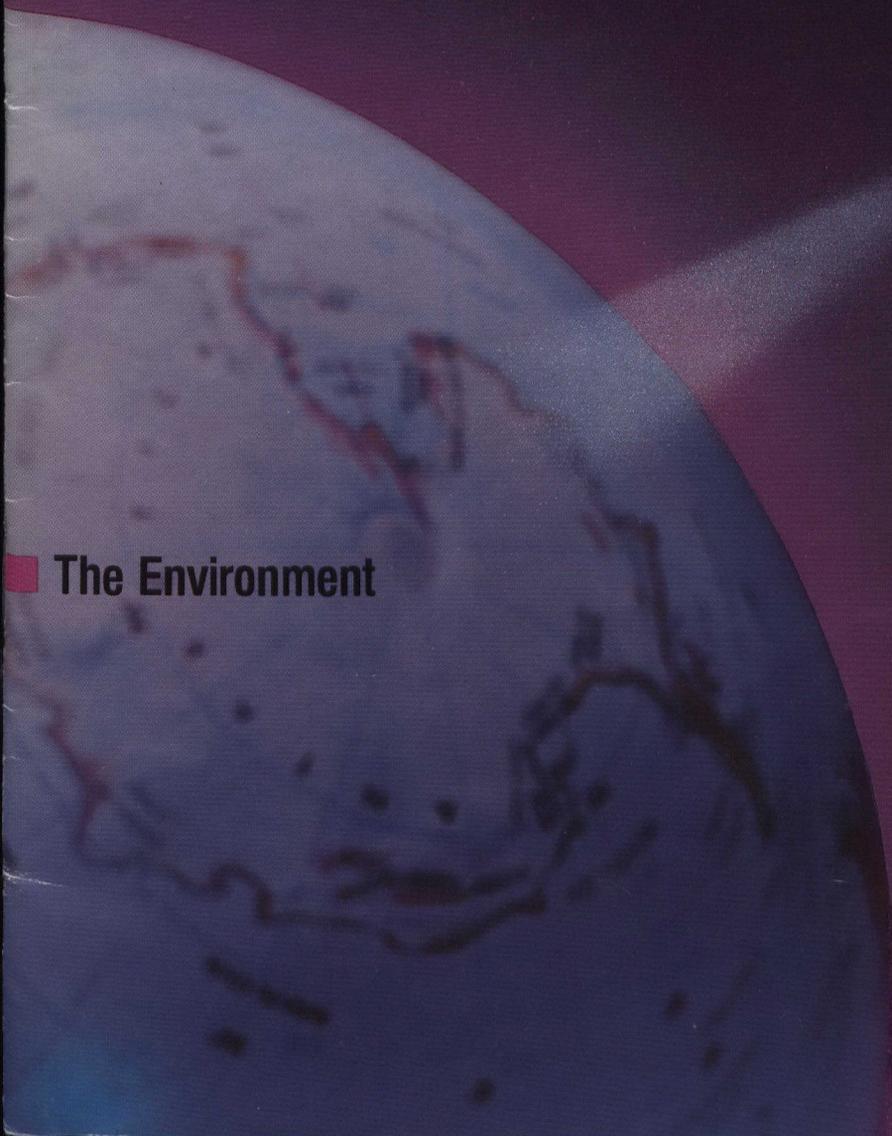


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# CANADA REPORTS

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■ The Environment

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**T**he world is facing an environmental crisis of unparalleled magnitude. Nature is sending us an urgent message that we ignore at our peril. The signs of this crisis are all around us: shortages of timber, exhausted soil, desertification, depleted fish stocks, seals dying in the North Sea, beluga whales washing ashore in the St. Lawrence River. Some even maintain that we have reached a point where the survival of humanity is at risk.

— Prime Minister Brian Mulroney, speaking to the General Assembly of the United Nations on September 29, 1988.

The global environment that everyone has always taken for granted is heading into a period of historic change. For the first time, humans have the power to change the environment on a global scale and they are using that power.

In recent years, one world leader after another has agreed that if environmental problems are not checked they will pose a threat to humanity as grave as that of nuclear war. Furthermore, the World Commission on Environment and Development — the Brundtland Commission — has said that humanity must adopt styles of development that are "environmentally sustainable."

"Sustainable development" will demand reform of energy production and consumption, farming, forestry, smelting, and petroleum and chemical manufacture, all of which

In the words of Monique Landry, Minister for External Relations and International Development: "Management of the environment is inevitably management of the future."

have a serious environmental impact. This concept calls for lower consumption of raw materials and of energy per capita and per unit of production. It will likely lead to different forms of consumption.

Global atmospheric changes such as the thinning of the ozone layer and the "greenhouse effect" show that no country is an island. All countries must co-operate as never before to find sustainable lifestyles at a planetary level.

This issue of *Canada Reports* outlines some of the environmental problems facing the world and some of the solutions that have been found in the past. It is not easy reading. The prognosis is grim unless people change their ways. But humanity must and will rise to the global challenge.



S. Clément. Publiphot

## Canada

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# The Environmental Global Village



Louis Psihoyos, Pono Presse Int.

**O**ur era has been one of unbridled, even aggressive, development. This must now be replaced by prudence, self-discipline and respect for the natural environment.

— Environment Minister Lucien Bouchard, speaking to a conference on global climate change, New York, March 2, 1989.

The planet's environment is in trouble. The world's first inquiry on the biosphere, the Brundtland Commission, has indicated that "major, unintended changes are occurring in the atmosphere, in soils, in waters, among plants and animals."

The United Nations-sponsored commission said that the rate of environmental deterioration is accelerating as the world's human population grows and as people seek more material goods. It is a global problem.

What are the big environmental issues that the world has to face?

## State of the Air

The atmosphere is as thin and fragile as the dew on an apple. As it changes overhead, people are starting to realize just how vulnerable the earth is to environmental changes. Air pollution threatens the future of everyone. The billions of tonnes of pollution injected into the skies are acidifying large areas of the earth, warming the global climate and thinning the high-altitude sun-screen called the ozone layer.

Possibly the most serious threat comes from the destruction of the ozone layer — that thin, invisible screen of gases high above. That natural sun shield, which evolved over billions of years, is under constant attack by chemicals that are used every day in refrigeration, air conditioning and some aerosol cans and foam plastics.

When these chemicals collect in the stratosphere, they reduce the ozone layer with the result that more harmful ultra-violet radiation from the

A mixture of rising air pollutants creates a new balance of gases in the sky and hazardous fallout on the land and water below.

sun reaches ground level. The UV-B radiation increases the risk of skin cancer and eye damage and it suppresses the immune systems. The same radiation harms such basic crops as wheat, corn, soya and rice and it kills plankton in the upper layers of the ocean.

The second big atmospheric threat is that of climate change.

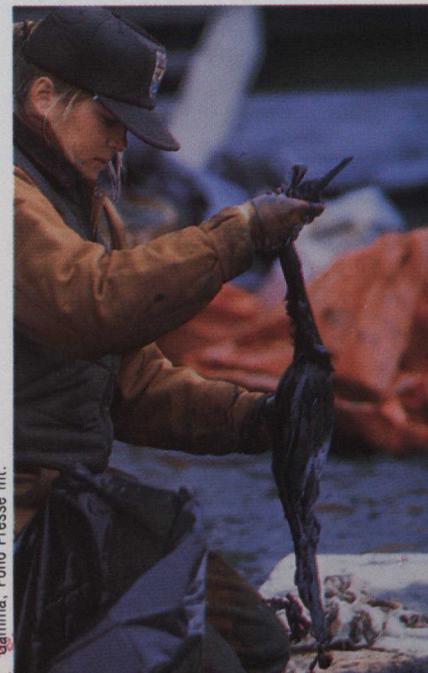
Whenever wood, coal, oil and natural gas are burned, carbon dioxide is emitted into the atmosphere. Every year billions of tonnes of this waste gas escape into the sky. There it joins other waste gases from industries, farm practices and clearing of forests. The gases trap more of the earth's heat through what is called the greenhouse effect, and this will cause temperatures to rise all over the world.

Scientists warn that over the next few decades the greenhouse effect will cause the greatest climate changes since the glaciers retreated 10 000 years ago.

As the atmosphere warms, the planet's whole heat circulation system will be speeded up, disrupting temperature, storm and rainfall patterns everywhere. In turn this will upset age-old food-production, settlement, economic and lifestyle patterns.

One of the most disturbing changes will be a rise in sea levels, caused partly by thermal expansion of water and partly by melting icecaps. Low coastlines around the world will be flooded, and some island nations face threats to their very existence in the century ahead.

Ecological disasters are most often the result of poorly planned and executed development projects.



Gamma, Pono Presse Int.

At the same time world scientists predict that there will be less rainfall in some of the world's great breadbaskets, including the centre of North America and parts of China and the Soviet Union.

Finally, acidic air pollution has become a serious problem in Canada and parts of the United States, Europe and Asia over the past two decades. Around the world 200 to 250 million t a year of sulphur and nitrogen gases are released into the atmosphere to form sulphuric and nitric acids.

A growing number of scientists and political leaders say that the world has to reduce its air pollution dramatically in order to save the atmosphere and the life which depends on it. But this will be a difficult challenge. About 90 per cent of global energy comes from carbon-based fuels: oil, coal, gas and wood. The burning of these fuels and smelting of millions of tonnes of metal ores supports industrial societies.

### State of the Water

When one looks at maps of the world it is hard to believe that there could ever be water problems. After all 70 per cent of the planet is bathed in blue.

But 97 per cent of that water is salt seas and cannot be used for drinking or growing crops. Most of the world's fresh water is locked up in polar icecaps or lies deep underground. Only one-hundredth of one per cent of the water on earth is both fresh and flowing on the surface, where it can be easily reached. For millions of years that was enough, but as population and industries have been growing, the amount of water available per person has been steadily shrinking.



Regis Bossu — Sigma

Water is also the universal solvent and thus the ultimate sink for most of the toxic chemicals that are released. In one part of the world after another, water is polluted with toxic chemicals, making it unfit for use. In other cases, people are pumping out shallow underground water supplies far faster than nature can replenish them.

Denuding the land of vegetation in many regions, such as sub-Saharan Africa, has altered the local water cycle, leading to a combination of flash floods, during the rainy seasons, followed by droughts.

Even the huge oceans are under siege as one oil spill after another fouls the productive near-shore regions inhabited by most of the world's marine life. At the same time, nations are over-fishing and over-hunting many fish and marine animal species as they seek more sources of food.

### State of the Land

On land the green mantle of vegetation is pushed back farther each year to make room for farms, grazing lands, cities and roads.

The ravages of acid rain are demonstrated in three photos taken in 1970, 1980 and today. What was once a green oasis now is a stark moonscape.

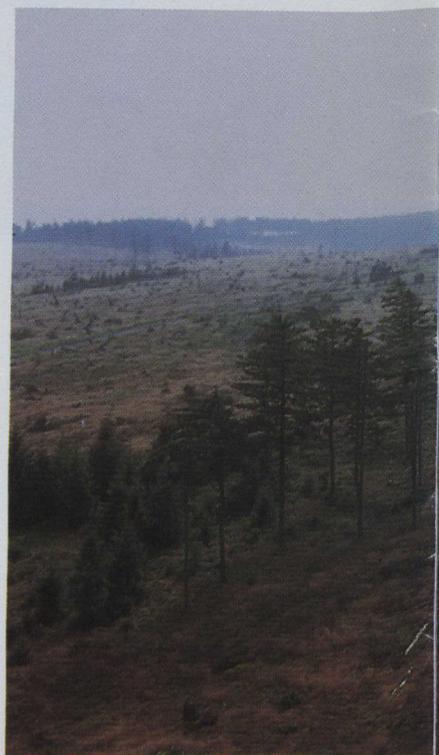
In the last few centuries, people have cut and burned one-third of the world's original forests, and the rate of loss has been accelerating rapidly in the past couple of decades. A century ago there were about 15 million km<sup>2</sup> of tropical forests, but now there are only 9 million. A common estimate is that every year the world loses as much as 150 000 to 200 000 km<sup>2</sup> of temperate and tropical forests. The Brundtland Commission has stated that if current trends continue, only the rain forests in parts of central Africa, South America and New Guinea will remain uncut by early in the next century.

In addition, acid rain and related air pollutants are attacking large forest areas. Large-scale damage first became apparent in West Germany in the early 1980s, and now half that country's forests are in decline. This decade has seen huge areas

of other forests in central Europe starting to decay, and similar damage is found in parts of eastern Canada and the northeastern United States.

Worldwide, 10 trees are being cut for every 1 planted; in Africa the ratio is 29 to 1. Environment experts suggest planting trees on an area the size of France every year in order to repair some of the damage to the biosphere and to cope with the needs of a growing world population.

As the forests are cut back and grasslands over-grazed or farmed too intensively, the deserts expand. One-third of the planet is already desert,



and these regions are growing at a rate of 60 000 km<sup>2</sup> a year, an area about the size of Sri Lanka. At the current rate, another 38 million km<sup>2</sup> of land in 63 countries, one-quarter of the land mass of the world, is in danger of becoming desert.

When the vegetation is removed, fertile soil built over millenia is blown or washed into rivers, lakes and seas. Around the world an estimated 24 billion t of soil are

lost each year, and fertility has been reduced on cropland twice the area of Canada.

### State of Life on Earth

As nations push back the wild areas, they destroy habitat for other species and change the conditions under which life has evolved.

Biologists know of 1.7 million forms of life, including plants, insects, fish, reptiles, animals and birds, and estimate that there are 10-30 million more. But the rapid loss of wilderness, particularly in the tropics, eliminates



Regis Bossu — Sygma

The world is having serious environmental problems now, with the demands of just over 5 billion people. By the year 2000 there will be more than 6 billion; 20 years later there

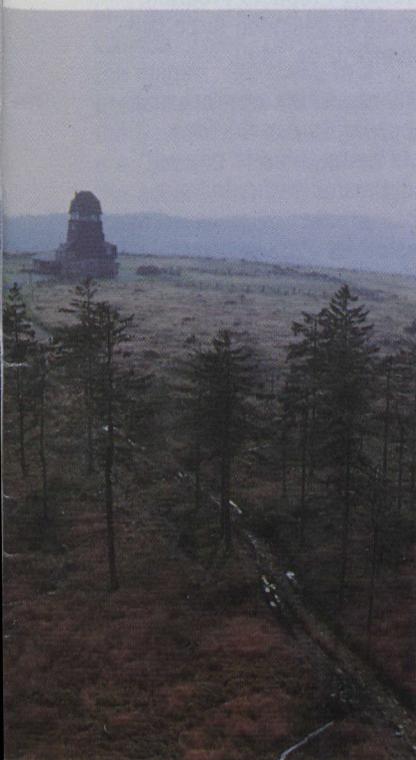
will be 8 billion; and by the middle of the century the population could reach 10 billion.

The Brundtland Report predicts that a 5-to-10-fold increase in manufacturing output will be needed just to

raise developing-world consumption of manufactured goods to industrialized-world levels by the time population growth rates level off next century.

Environment and political experts agree that while the world must continue to develop an economy that will support a growing population, future development must be more environmentally sound. The alternative, they say, is further damage to the biosphere and this will lead to poorer and less healthy societies.

"Environmental degradation affects all nations of the world and respects no boundaries. Whether we like it or not, the world is at a turning point. The environment cannot be allowed to deteriorate. We need global solutions," said Monique Landry, Canada's Minister for External Relations and International Development.



Regis Bossu — Sygma

an estimated 1 000 species a year. It is the greatest extinction of life since the dinosaurs vanished.

Life is also threatened by chemical pollution. There are an estimated 100 000 commercial chemicals in the world and the number grows by 1 000 to 2 000 per year. Most have not been tested in any depth for their effects on living things.

## GLOBE 90 — Environment-Industry Trade Fair and Conference

In March 1990, Vancouver will hold North America's first international environment-industry trade fair and conference.

GLOBE 90 will be a showplace for products, services and technologies that allow business to operate more cleanly and efficiently. At the same time there will be an international conference on "sustainable development" — the concept of doing business without destroying the environment.

Environment and economic development, once thought to be competing solitudes, now are recognized as being inseparably linked.

Forms of development that take into account impact on the environment are seen as

the most viable approach to long-term business profitability and a healthy economy.

The event will be supported by private business in cooperation with the Canadian and British Columbia governments. Organizers expect that 2 000 delegates from 40 countries will hear over 400 papers at the conference. In addition, there will be more than 500 exhibits at the trade fair that will deal with air, land and wastewater management, information systems and consulting, solid waste, and hazardous waste.

The marketplace of ideas and hardware will draw people from developed and developing countries, international lending institutions, user industries, municipalities, and environment-industry suppliers. Environment

experts, business executives, consultants, financiers, government officials, engineers, technicians and scientists will be at the meetings to share ideas and come up with business-oriented solutions. A number of countries are expected to present 5-to-10-year resource-development plans for discussion by international experts.

The five-day meeting will show technologies from Canada and from around the world, with a special focus on the Asia-Pacific region.

For more information contact: Globe 90, Suite 250, 1130 West Pender Street, Vancouver, B.C., Canada V6E 4A4. Telephone: (604) 681-6126. Fax: (604) 681-6825. Telex: 04-51586.

# Toward an Environmentally Healthy Canada

**A**t first glance, Canada seems an unlikely place to find serious environmental problems. With less than half of one per cent of the world's population scattered across seven per cent of the world's land mass, this country still has the image of being pristine wilderness.

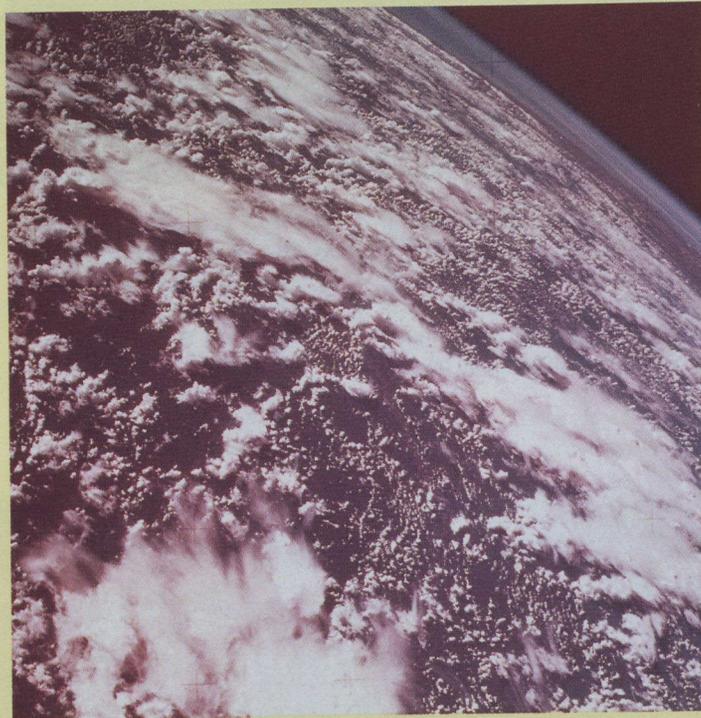
In the north there remains a lot of wild country inhabited by wolf packs, grizzlies and polar bears. In many areas you can drink the water straight from the lakes, and the only sign of humans will be the plume of wood smoke from a campfire.

But Canada, like any modern, industrial nation, is feeling the environmental strains of too much pollution and too-rapid exploitation of natural resources.

These days even great distances are not a shield against such long-range problems as acid rain, toxic-chemical fallout, climate change and the thinning ozone layer. In the more populated regions there are persistent forestry and fishery shortages, and almost all urban areas are having a difficult time disposing of their garbage.

Public opinion polls in recent years consistently show the state of the environment is one of the top concerns with Canadians, who are bombarded by a growing tide of facts, figures and statements from a large number of public-interest groups and university and government researchers. The nation's communications media, which see the environment as big news, feed out a steady stream of stories about the environment every day.

## Environmentally Friendly Products Program Announced



Syigma

**P**ollution continues to threaten the earth's protective shell.

**E**nvironment Canada has launched a program to identify products that conserve energy, are recycled or recyclable, are biodegradable and are free of ozone-depleting substances.

The new program will enable Canadians to take a more active role in helping to protect the environment by choosing products that cause it the least damage.

The idea for the Canadian labelling program originated with the Conservation and Protection Service of Environment Canada, about four years ago. A similar program

has been in effect in West Germany since 1978. More than 2 000 German products now bear the United Nations' blue-angel symbol attesting to their environmental safety.

The average Canadian family of four disposes of 6 kg of garbage a day — a national total of 9 million t a year. Getting rid of that garbage costs hundreds of millions of dollars every year and contributes to a multitude of environmental problems. Cars and other vehicles emit pollution. Chemicals used around the home and garden can also cause environmental damage.

The federal government, through Environment Canada, is providing both financial and administrative support to launch the Environmentally Friendly Products Program, which is designed to be self-financing by 1990.

Manufacturers or processors applying to use the logo will be required to pay an administrative fee to have their product or process tested for "environmental friendliness." Companies whose products pass the test — and who want to label their products with the special logo — will be required to pay an annual licence fee, based on retail sales.

Product categories and performance criteria for the Environmentally Friendly Products Program will be decided by an advisory panel, established under the authority of the new Canadian Environmental Protection Act (CEPA). The multisectoral panel will have members from consumer and environmental interest groups, industry, labour and academics.



## Acid Raindrops are Falling on Our Heads

Acid rain has been one of the top environment issues for a decade.

Much of eastern Canada is vulnerable to acid-rain damage, and more than 80 per cent of Canadians live in areas of high acidic fallout. The corrosive bombardment of rain, snow, sleet, dry particles and gases has already damaged 100 000 of 700 000 lakes and threatens another 300 000. Scientists believe that about 14 000 lakes are already biologically dead.

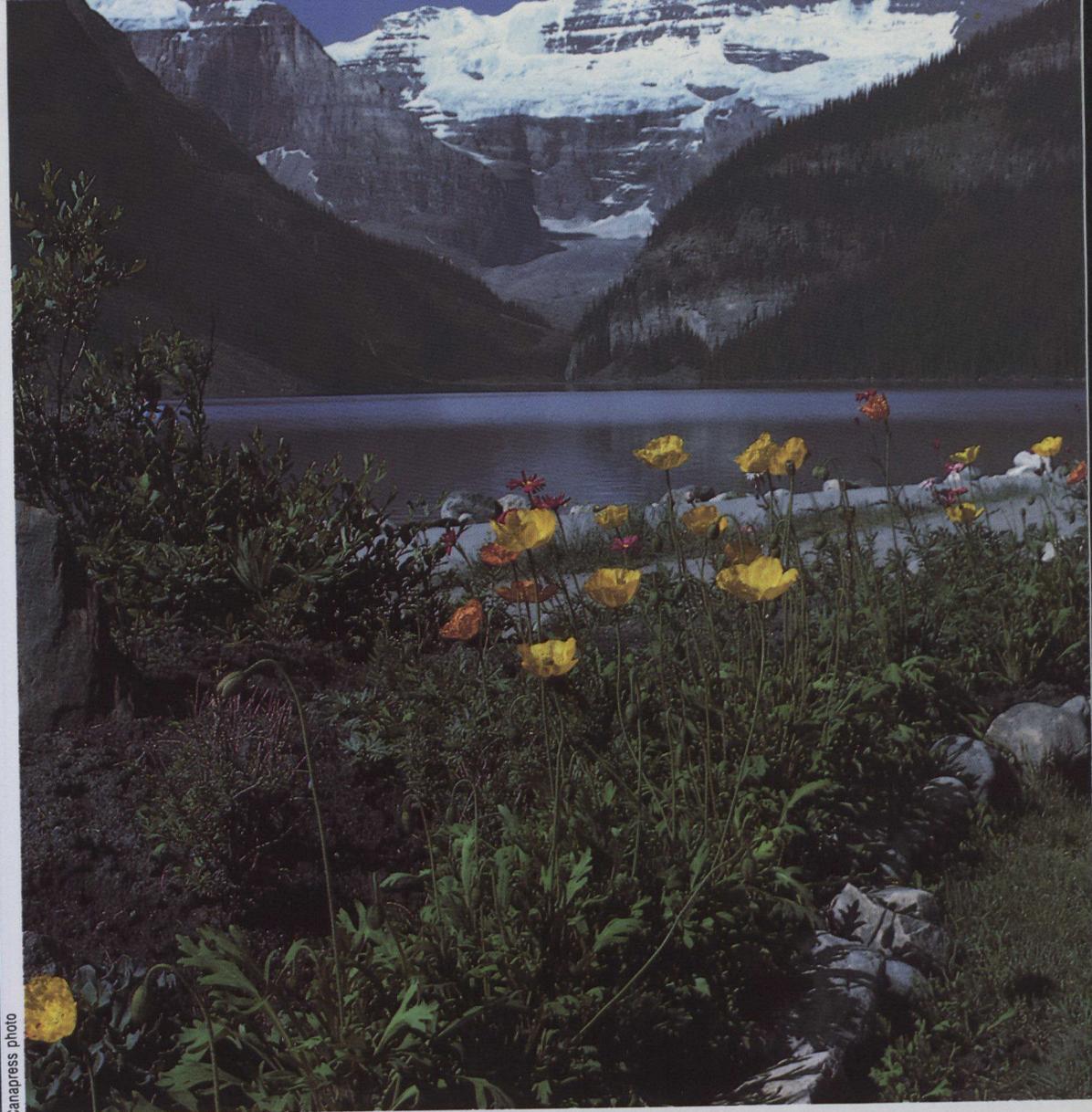
Acid rain and related air pollutants are killing forests in growing areas of eastern Canada. Trees, particularly the maples, are dying in a broad band from Ottawa to the Gaspé Peninsula in eastern Quebec. The maple leaf, the national symbol, is being eaten away by pollution in other areas too, such as southern Ontario, the country's industrial heartland.

The same air pollutants that attack the fish and the trees are threatening human health. Medical studies have shown that when levels of smog containing sulphates, sulphuric acid droplets and ozone rise, so do hospital admissions.

### Toxic Materials in the South

Toxic chemicals in the drinking water supply and food chain are another big worry for Canadians. They are causing death and deformities in some wildlife species, and there is concern about what they will do to humans over the long term.

In some cases, hazardous chemicals escape in major accidents. A 1988 fire at a Montreal-area warehouse containing polychlorinated biphenyls forced the evacuation of over 3 300 people for three weeks.



Canapress photo

Most often, chemicals escape in a steady if less spectacular stream. They are in industrial and municipal sewer pipes, seeping from old dumps, and some are deliberately sprayed as pesticides.

Most chemicals eventually end up in water, the universal solvent. As a result even the Great Lakes, which contain one-fifth of the world's fresh-water supply, have become contaminated from decades of pollution. In some parts of the Great Lakes basin, near chemical industries, people have demanded that governments intervene to pipe in cleaner drinking water from less polluted areas.

The chemicals flow with the currents. Downstream from the Great Lakes, in the St.

Lawrence River estuary, beluga whales are so laden with toxins that they can be considered floating hazardous waste sites.

### And Now, in the North

In the Arctic, the problem is toxic fallout from industrial areas thousands of kilometres away. The chemicals build up in the fat of wild animals eaten by people, and no one knows what long-term health effects this pollution will have on northerners.

Throughout eastern Canada, extensive acid-rain damage to materials, historic buildings and monuments has been widely documented.

There is, as yet, no evidence of a serious acid-rain problem in western Canada.



D. Auclair, Publiphoto

Canada's long coastline is also vulnerable to pollution. During the past winter there were two large oil spills off the west coast.

In January, oil leaking from a barge in U.S. waters drifted onto the shoreline of a national park in British Columbia. Two months later, the tanker *Exxon Valdez* ran aground on a shoal after leaving port in Alaska, creating the largest tanker spill in North America. In this case the oil washed up on U.S. coasts, just north of the Canadian border.

### Results of Atmospheric Changes

Federal government scientists say the ozone layer has already thinned by 3 to 4 per cent at latitudes such as Toronto's. They estimate that people living in this heavily

populated region now face an 8-to-16-per-cent greater risk of skin cancer because of the increased solar radiation leaking through the damaged ozone shield.

Canada has suffered a series of droughts in the 1980s. It is too early to tell if they are caused by an early appearance of the greenhouse effect, but researchers say that in any case this is what life will be like as the climate warms up. Climate change in Canada will upset the water cycle, causing dramatic changes in agriculture, forestry, hydro-electric power production and even the future of coastal cities.

PCBs can cause cancer and liver damage in laboratory rats, leading to fears that these chemicals will have long-term effects on humans.

The food-producing Prairie provinces are predicted to get much drier, thus reducing the amount of grain available for export. The Great Lakes are forecast to drop and this will hurt shipping and the production of electric power at generating stations such as Niagara Falls.

On the seacoasts, the oceans will rise, threatening such low-lying cities as Charlottetown and Saint John. Over a century or two the province of Prince Edward Island may well be cut into three or four small islands.

### Cleaning Up Our Act

The rising tide of public opinion in favour of a cleaner environment has led to an increasing number of major pollution cleanups.

A couple of decades ago, Lake Erie, one of the Great Lakes, was so polluted with sewage, soaps and fertilizers that it was turning into a green, soupy mess. Many people said that the lake was dying.

Since then Canada has spent more than \$1 billion on sewage treatment to reduce pollution to the Great Lakes, and the United States has spent even more. This has led to a dramatic reduction in the phosphorus pollution that was turning the lower Great Lakes into bowls of algae.

Canada is now in the midst of a massive acid-rain reduction program in the eastern half of the country, where the problem is most severe. Emissions from copper and nickel smelters, coal-burning power plants and cars are all being cleaned up.

Between 1980 and 1994, the emissions of sulphur dioxide pollution, which causes sulphuric acid rain, will be cut in half. It will cost an estimated \$500 million a year.

In addition the pollution controls being required on new cars will prevent an increase in nitrogen oxides which form nitric acids and which help to form low-level ozone — a health hazard.

### Protecting the Ozone Layer

At the same time, Canada is trying to save the high-level ozone layer that shields the planet from excessive solar radiation.

Canada was the host country for signing of the 1987 Montreal Protocol, an international pact to cut the production of ozone-destroying chemicals by half by 1999. Earlier this year, Environment Minister Lucien Bouchard announced that the Canadian government intends to completely eliminate these chemicals within a decade. Mr. Bouchard urged other countries to seek at least an 85-per-cent reduction in such chemicals.

### Making Canada's Environment Healthier

Canadians are also taking personal responsibility for cleaning up the environment. In parts of the country people are separating the garbage in an effort to recycle valuable wastes and to slow the stream of material that is filling up the nation's dumps.

Surveys have shown that Canadians want to be able to buy products that do not harm the environment. Four out of five people would even pay as much as 10 per cent more for such goods. In 1988, Environment Canada launched a program to help consumers find products that help to relieve pressure on the environment. The Environmental Choice Program uses an independent panel to screen products to be recommended to the public. The first three products



Drew Gragg

proposed for the label are re-refined motor oil, insulation made from recycled paper, and some products made from recycled plastic.

This is just the starting point. The advice of groups such as the World Commission on Environment and Development — the Brundtland Commission — points to fundamental reforms to many business and government practices if people are going to prevent more ecological damage. It called for a move to environmentally sustainable forms of development to replace those that emit a lot of pollution and use up natural resources too fast.

The Brundtland Commission, with its cabinet ministers and business experts, legitimized many of the pleas for environmental responsibility that had been coming from environment groups for years.

For decades some of the strongest environmental leadership has come from public-interest groups. They kept alive the flame of interest even when governments, business and the public at large showed little concern. They provided a steady flow of information on the environment to the news media and the public, and some even mounted recycling and energy-efficiency projects.

A secure environment requires the active participation of a much wider range of groups than has been the case until now. Non-governmental environmental organizations have played an important role in promoting knowledge and awareness on the environmental consequences of poorly thought-out economic planning. As a result, individual and collective values and attitudes are being made more sensitive to environmental concerns.



Environnement Canada

Consumer groups have paid special attention to the potential long-term health effects of certain food additives and have urged more-widespread product labelling so that individual buyers can be better informed about what they are consuming.

Now members of these groups in Canada are being asked to sit at the same table as government and business officials.

For example, they were involved with Canada's strong response to the Brundtland Report. In 1986 the country's environment ministers formed a 17-member National Task Force on Environment and Economy to spell out what sustainable development means for Canada. There were cabinet ministers, business executives and environment group leaders on the special body.

A year later the task force issued a tersely worded but sweeping report summed up in the phrase: "Change is

**Destroying the forests increases the amount of greenhouse gases, thus reducing the world's oxygen supply.**

necessary and it must occur now." The team of environment and business experts said that "long-term economic growth depends on a healthy environment." It added that "environmental considerations. . . must be made integral to economic policy-making and planning."

The task force report triggered a major debate about sustainable development among environment and government experts in Canada. The Prime Minister and the heads of the provincial and territorial governments have endorsed its recommendations.

By this spring, a national and seven provincial round tables had been created by governments. In addition two major

business groups, the Canadian Chamber of Commerce and the Business Council on National Issues, had created special groups to recommend how environmental protection could be integrated with business practices.

These round tables and task forces include senior decision-makers from government, industry, environment organizations, labour, academia and aboriginal peoples. One of their most important tasks will be to act as a clearing house for ideas about the priorities and techniques for change.

The members of round tables are expected to lead public opinion and to implement change within their own government departments, business corporations and other organizations.

Even as the round tables are preparing to issue advice, a number of governments and businesses are starting to make changes. For example, more governments are demanding tough environmental assessments of projects before giving approval or funding. A number of companies are reducing their production of hazardous chemicals and are getting into recycling and waste reduction.

The Canadian Chemical Producers Association has set up a Responsible Care Program which encourages chemical companies to work with communities to develop emergency plans and to inform citizens about chemicals in their local industries. This program is being considered by chemical industries in other countries.

Canadians are looking for better ways of putting development on an environmentally sustainable basis. There is a long way to go and the job will take a lot of work at home, as well as global co-operation.

# Canada and the World's Environment

Canadians are concerned not only about the state of their environmental back yard but about the rest of the global biosphere.

They realize that what happens in one country often affects the environments of many others. At first Canadians were drawn to the plight of the great mammals — the whales, elephants and rhinos. Attention was then riveted on major environmental incidents such as oil spills, and chemical and nuclear accidents.

In recent years, Canadians have begun feeling a strong personal concern about the global atmospheric changes being triggered by "normal" development activities around the world.

The atmosphere recognizes no national boundaries. Acidic and toxic chemicals from one country are blown hundreds, even thousands of kilometres to land on other people. Global emissions of ozone-eating chemicals are destroying the planetary sun shield and exposing everyone to more harmful solar radiation. Carbon dioxide and other greenhouse gases combined with the effects of deforestation are altering the climatic balance of the entire planet.

Common threats to the biosphere are apparent, but they have been predicted for a long time, and Canada's involvement in discussions about the future of the global environment goes back many years.

## The Brundtland Commission

Canadian environmentalist and businessman Maurice Strong chaired the 1972 Stockholm Conference on the Human Environment, the first such meeting in history. Mr. Strong then became the first head of the newly formed United Nations Environment Program.

Canada was also instrumental in getting the United Nations to create the World Commission on Environment and Development, the Brundtland Commission.

The group's 22 members came from 21 nations around the world. They included Mr. Strong and fellow-Canadian James MacNeill, who served as its secretary-general. Canada gave \$1 million in support of the commission's work and was the site of one of its major visits in 1986.

The Brundtland Commission's final report, *Our Common Future*, issued in April 1987, has become a landmark document for promoting the idea that nations can and must find ways of doing business that do not destroy the environment. The concept is



M. Rousseau, Publiphoto

Industries continue to pollute the atmosphere.

The commission, headed by Gro Harlem Brundtland, began work in 1984. Dr. Brundtland was a former Norwegian environment minister who went from leader of the opposition to prime minister during her work with the commission.

summed up in the phrase "sustainable development." The commission said the world needs development that will alleviate poverty and suffering around the world, but this development must be different from the kind that causes massive environmental damage.

## Thirty Per Cent or Bust

While no one has found a simple key to sustainable forms of development, many nations have been attacking specific, major environmental problems. Acid rain has been one of the great threats to Canada's environment with half the acidic sulphur pollution blowing north from the United States. Weather patterns in the far north drop acids and other pollutants from several nations onto the fragile Arctic environment.

As a result Canada has been pushing for controls of transboundary air pollution for many years.

Canada was a member of what became known as the 30-per-cent club, so called because signatory nations agreed to reduce their emissions of sulphur dioxide by 30 per cent by 1993. At a March 1984 meeting in Ottawa, Canada and nine European countries declared their intent to reduce acid rain and therefore long-range air pollution. The statement came just weeks after Canada announced plans to cut domestic sulphur emissions in half within a decade.

This led to the signing in 1985 of the Helsinki Protocol to reduce sulphur pollution.

## Ozone-Eating Chemicals

Deterioration in the ozone layer has loomed as a major threat to the world's environment in recent years. Canadian atmospheric scientists have been part of an international effort to understand

chemical threats to this planetary sunscreen. In delicate international negotiations, officials from Canada have acted as brokers between various nations. They helped countries reach a consensus that the threat was real and had to be tackled with cutbacks in the use of harmful chemicals, principally chlorofluorocarbons (CFCs).

At a meeting in Canada in 1987, a major group of nations hammered out the Montreal Protocol, which pledged them to cut production of ozone-depleting substances in half by 1999. It was a difficult decision because CFCs are the chemicals that run the world's refrigerators and air conditioners, and it will be costly and difficult to find safe replacements.

News continues to come in of holes in the ozone layer over the Antarctic and the Arctic, and pressure is growing for even tougher controls.

Last February, Environment Minister Lucien Bouchard said that all nations should work for at least an 85-percent reduction in ozone-eating chemicals. Mr. Bouchard said Canada would seek to eliminate all uses of these dangerous substances within a decade.

### The Greenhouse Effect

The other big global environmental threat is that of climate warming caused by the greenhouse effect. Canada held one of the major meetings on this problem last year. A conference called The Changing Atmosphere: Implications for Global Security brought world environment and policy experts together in Toronto in June 1988 to suggest how atmospheric damage such as climate change can be prevented.

The conference called for policies to reduce greenhouse gases. The experts said that global carbon dioxide emissions should be cut in half in order to stop climate change and suggested a 20-percent cut by 2005 as an interim step.

They said that nations should promote energy-efficiency programs in order to reduce the need for carbon-based fuels. And the group proposed, among other things, a World Atmosphere Fund, based partly on a levy on fossil-fuel consumption by industrialized nations, to help developing nations to build clean industries and to protect their forests.

### International Action

The conference also called for an international action plan to save the atmosphere, in effect a global law for its protection. This led to a February 1989 meeting of international legal and policy experts in Ottawa. That meeting drafted a set of international legal principles for use in preparing both a convention to slow climate change and an umbrella agreement to protect the atmosphere in general.

In March, Prime Minister Brian Mulroney joined a number of other leaders at The Hague for the world's first environmental summit meeting. The summit issued a declaration saying that the right to live, the most fundamental of all rights, is being jeopardized by assaults on the earth's atmosphere.

This declaration called for the development, within the framework of the United Nations, of a new institutional authority, either by strengthening existing institutions or by creating a new institution, to combat any further global warming of the atmosphere.



Sygmna

Frozen strawberries in Florida are the result of climatic disorders.

One of the great tasks facing the world is to agree on ways that all nations, particularly poor countries, can develop and maintain healthy economies without accelerating environmental degradation. Finance Minister Michael Wilson has said that the world must help poor countries protect their natural resources as they build their economies.

In a speech to a meeting of the World Bank in September 1988, Mr. Wilson said that "environmentally sound development is no contradiction in terms. Indeed, in the long run, it may be the only sure foundation of better lives for everyone in the world."

### Environmentally Sound Development

This country's main way of providing development assistance is through the Canadian International Development Agency (CIDA). When the Brundtland report was released in 1987, CIDA issued its own policy on environment and development.

It warned that "the world's poorest countries are facing an environmental crisis of unprecedented dimensions. In many regions soils are being washed away, forests are disappearing, deserts are spreading, genetic and wildlife resources are in jeopardy and water resources are threatened. Most of the resources under stress today are vital to the long-term economic growth of these countries."

CIDA has endorsed the Brundtland recommendations. The agency is redirecting its spending and now puts 20 to 25 per cent of its bilateral assistance into projects designed to improve the management of renewable and non-renewable resources.

CIDA is also shifting its emphasis from large-scale capital projects toward programs such as basic education and skills training. This is aimed at helping people around the world develop the ability to build their own futures.

## To Ensure a Sustainable Future

The international debate about a "sustainable future" is just beginning. Canada has already held a number of regional conferences to educate people about the emerging ideas around the process of sustainable development, and several international meetings are planned.

In March 1990, Vancouver will be the site of a trade fair and conference on techniques for doing business in ways that are less environmentally destructive. It is called GLOBE 90, Global Opportunities for Business and the Environment.

The Brundtland Commission also suggested a world conference on sustainable development in 1992, an idea which has been endorsed by the United Nations. The United Nations General Assembly is expected to confirm this fall that the meeting, to be called the UN Conference on Environment and Development, be

held in 1992. The UN is also expected to agree on a location and agenda.

Last fall at the United Nations, Prime Minister Mulroney announced that Canada would create a world centre to promote internationally the concept of sustainable development. The centre is to be established in Winnipeg with both government and private funding.

In the future, each country must develop strategies for adapting its development to fit with the ecological realities of the world. All must find business practices and lifestyles that are at least environmentally neutral and preferably environmentally friendly.

In Canada, a National Task Force on Environment and Economy recommended that this country develop a conservation strategy to "ensure that we preserve genetic diversity and maintain essential ecological processes and life support systems."

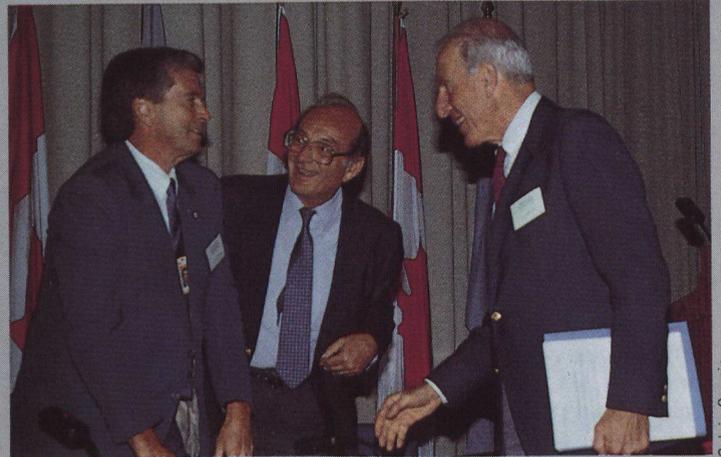
The challenge ahead will be to turn ideas into plans and plans into action.

## Canadian Environmental Advisor Appointed

**A** diplomat with considerable experience in international environmental, resource and ecological matters has been appointed Special Advisor on Environmental Affairs to the Secretary of State for External Affairs, the Right Honourable Joe Clark. J. Alan Beesley, O.C., Q.C., is charged with co-ordinating Canadian foreign policy and related activities on major international environmental and ecological issues and representing Canada at international conferences concerned with such global problems.

In addition, he has served as Canada's Ambassador for Disarmament and was Canada's Ambassador and Permanent Representative to the General Agreement on Tariffs and Trade for four years. He has also been Canada's representative on the International Atomic Energy Agency and the United Nations Industrial Development Organization.

Mr. Beesley has also represented Canada in a wide variety of United Nations conferences in New York and Geneva for over 25 years,



Sylvie Gauvin

Mr. Beesley was Special Advisor to the External Affairs Minister on the Law of the Sea, headed Canada's Law of the Sea Delegation, and served for three years as Ambassador to the Law of the Sea Conference. His involvement in environmental concerns goes back to 1972 when he represented Canada on environmental law issues at the 1972 Stockholm environmental conference. With his election to the International Law Commission in 1986, where he will serve until 1991, Mr. Beesley has continued to be actively involved in the development of international law.

On the left, J. Alan Beesley, Canada's special advisor on environmental affairs.

having worked with nearly every specialized agency of the United Nations and most of the UN General Assembly committees.

An Officer of the Order of Canada, Mr. Beesley holds an honorary doctorate in Environmental Studies and is a recipient of the Outstanding Public Service Award. He was most recently a University Visitor at the University of British Columbia law school.



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# wo Neighbours with a Shared Problem

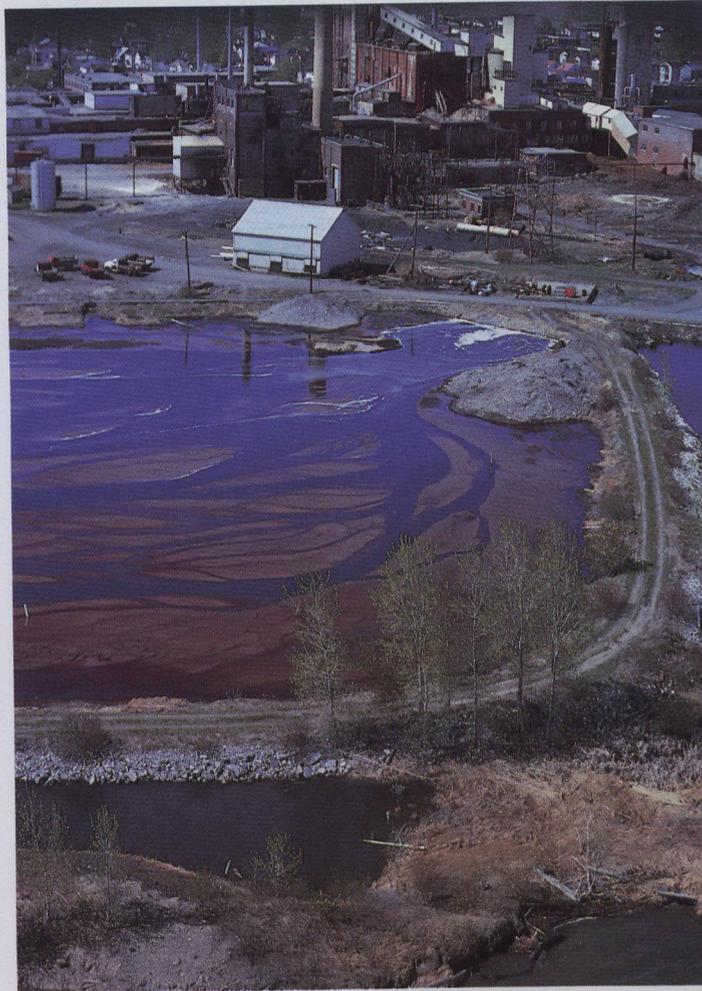
Canada and the United States have long boasted of sharing the world's longest undefended border, but this does not mean there are no disputed issues.

And some of the most contentious issues in the past century have been environmental and resource disagreements. A century ago, the two countries almost came to blows over rights to water for irrigation from one western river that flowed across the border.

After incidents like that, the two nations started to draw up agreements over the sharing of boundary waters and they wrote in promises to avoid fouling each other's environment. This created one of the oldest anti-pollution treaties around: The Boundary Waters Treaty of 1909.

The treaty's main job was to sort out the joint uses of shared waters for domestic and sanitary uses, navigation, and power production. But it also contained a potent clause about environmental protection: "Boundary waters and water flowing across the boundary shall not be polluted on either side to the injury of health or property on the other side."

That treaty also created the International Joint Commission, the world's first permanent body to mediate and advise two sovereign governments on shared water management and environmental problems. Half the commission's six members are appointed by the Prime Minister of Canada and half by the President of the United States.



Alain Cornu, Publiphoto

The quality of drinking water is a looming environmental issue.

For decades this body has advised the governments, held public hearings, issued reports on the state of boundary waters, mediated in disagreements and helped to monitor boundary-water agreements.

## Cleaning the Lakes and Rivers

Two of the most important pacts are the 1972 and 1978 Great Lakes Water Quality Agreements. They are major

attempts to preserve the world's greatest international freshwater reservoir in a region that is home to about 37 million people and is an industrial heartland.

Over the years, development around the lakes led to their degradation. A couple of decades ago, Lake Erie was so polluted by phosphorus from sewage, soaps and fertilizers that it was turning into a green, soupy mess. In time, oxygen-starved zones, where no fish could survive, formed on the bottom of the lake and it was commonly said that Erie was dying.

Under the water-quality agreements, Canada and the United States have spent an estimated \$15 billion controlling sewage from towns and cities and, yes, Lake Erie is much cleaner now than it used to be. Green slime no longer coats its beaches, its waters no longer taste foul, and the fishing is improving.

The 1972 cleanup was aimed mainly at phosphorus, which was "over-fertilizing" the lakes. The 1978 agreement tried to tackle the much more difficult problem of toxic chemicals at a time when scientists were having a hard time even measuring all the chemicals in the water.

This 1978 agreement contained two historic clauses.

The first called for the elimination of all discharges of persistent toxic substances into the lakes.

The second said that protection of the lakes should be based on an ecosystem approach, which means that the effects of humans on all parts of the lakes' environment should be studied and controlled. It was written into the pact at a time when many people were reluctant to consider environmental linkages. Some still did not realize that toxic chemicals being found in the fish, birds, water and mud bottoms of the lakes were signals of a toxic chemical hazard that also threatened humans.

It has been hard to implement the ideals of this agreement. The problems have proven to be far more complex than they appeared in 1978, but governments are starting to implement the 1978 principles.

The task ahead is daunting. No one is even certain how much pollution is going into the Great Lakes, though it has been estimated in the hundreds of thousands of tonnes per year. Scientists have identified over 360 synthetic chemicals in the lakes, some of them known to be highly hazardous. In 1985, Environment Canada scientists calculated that 9 t a day of toxic chemicals were flowing down the Niagara River alone, site of the world-famous Niagara Falls.

The Niagara region, particularly on the U.S. side, has been a major chemical-manufacturing centre for decades. As a result the land along that river is dotted with dozens of chemical dumps, including

the infamous Love Canal, near Buffalo, New York, which is so hazardous that hundreds of people had to be evacuated from homes around it.

In recent years, the two nations have started to spell out more detailed pollution reductions for the lakes in a series of laws and agreements. These include a 50-per-cent reduction in chemicals flowing into the Niagara River. Ontario, the highly industrialized province which borders on four of the lakes, has enacted laws that call for the virtual elimination of discharges of persistent toxic substances into the province's waters.

### Scrubbing the Air

Air pollution has been an equally difficult problem and has caused some of the greatest strains in Canada-U.S. relations.

It is not a new issue. In the early 1920s, American farmers complained that sulphur fumes blowing across the border from a smelter in Trail, British Columbia, were destroying their crops. Farmers finally received compensation and the smelter was cleaned up. Hearings on the issue established the principle in international law that a country must not pollute the atmosphere to the injury of another nation.

In the 1980s, it has been Canada's turn to press the United States on an even bigger transboundary air problem, that of acid rain.

A decade ago it became apparent that the millions of tonnes of acidic air pollution were having a disastrous effect on Canada's environment. Scientists said that most of it was coming from copper and nickel smelters and from coal-burning power plants. Canadian researchers also determined that half that pollution falling on Canada originated in the United States, particularly in dozens of huge power plants in the industrialized mid-west.

Their tall smokestacks, built to move the pollution away from local residents, were adding to a veil of sulphate particles in skies, and prevailing winds carried much of the pollution across the north-eastern part of the continent.

As a result more than 3 million t a year of U.S. sulphur pollution falls in eastern Canada each year. In some regions, U.S. sources are responsible for 70 per cent of the fallout. Canadian governments have asked for years that the transboundary pollution be reduced to levels that the environment can sustain without damage.

In 1980, the two countries agreed, in a Memorandum of Intent, to negotiate a clean air pact. But the new U.S. administration that took office in 1981 believed that more scientific study was required and

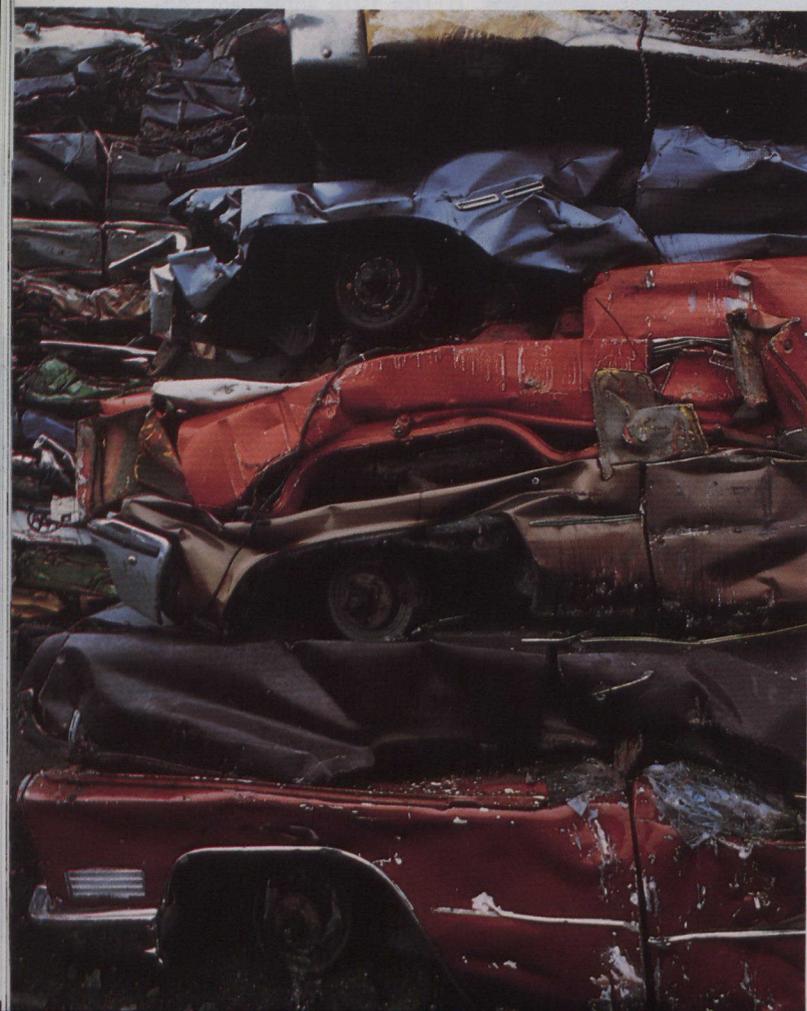


The greenhouse effect could bring about enormous environmental disasters. Areas that now are fertile food-producers could be turned into deserts.

as a result little progress was made on an agreement to reduce pollution.

There are signs of change in the United States. For years public pressure has been building in favour of a major reduction in acidic air pollution. President George Bush has proposed a cut of 10 million tons of sulphur air pollution by the year 2000.

Even though acid rain talks between Canada and the United States were stalled for years, environment officials in both nations worked closely on another common problem — threats to the ozone layer. In this case the United States was one of the nations pushing for very strong controls on chemicals that destroy stratospheric ozone. Both countries were strong supporters of an agreement that became the Montreal Protocol to protect the ozone layer.



Louis Psihoyos, Pomo Presse Int.



Les Szurkowski, Canapress photo

## Taking the Fear out of Flying

There is also a long history of co-operation in wildlife protection. In 1916 Canada and the United States signed the Migratory Birds Convention Treaty, which has helped to maintain the populations of waterfowl and other birds that nest in Canada, migrate to the United States in the fall, and are hunted in both countries.

The story of the whooping crane shows what can be done. By 1941 there were only 16 of these regal, white birds left on the continent, but Canada and the United States have protected and nursed the small flock back to health. Now more than 160 wild birds migrate between the two countries, and the species appears to have been pulled back from the brink of extinction.

Canada and the United States are embarked on an even more ambitious project, that of preserving the great fall migration of tens of millions of ducks. This will require more than just controlling hunting. It also means saving the remaining wetlands that ducks need to raise their young.

Nearly a century of some of the most intensive farming anywhere has transformed the great plains of central North America into one of the world's biggest food-producing areas. The change has claimed much of the wildlife habitat, including thousands of tiny ponds in the northern United States and Canada that were breeding grounds for waterfowl.

In an effort to reverse the trend, Canada and the United States signed the North American Waterfowl Management Plan in 1986. Over the next 15 years it is to protect and improve more than 15 000 km<sup>2</sup> of wetlands, mainly in the Prairies, but also in Ontario, Quebec, the Maritimes and parts of the United States. Governments are looking to private sources for much of the estimated \$1.5 billion needed. About \$1 billion is to be spent on the Canadian Prairies, and three-quarters of that money is expected to come from governmental and non-governmental sources in the United States.

Farther north, Canada and the United States face an even more difficult wildlife-management task with even higher stakes. At issue is the future of the barren-ground Porcupine caribou herd. An estimated 165 000 animals migrate across Alaska, the Yukon and the Northwest Territories, and the herd is vital to the way of life of Canadian aboriginal peoples in the area.

The United States has created the Alaska National Wildlife Refuge which includes part of the calving grounds for the herd. Canada has created the North Yukon National Park which includes the Canadian portion of the calving grounds in adjoining territory. In recent years, however, there has been pressure from some business and political interests in the United States to allow oil and gas exploration in the coastal plain of the Alaska refuge. Canada's position is that the calving grounds should be given full wilderness designation within the U.S. system and that the two parks should be twinned to prevent further development.

Acid rain is suspected as one of the leading causes of forest decline.

## Sharing a Continent

In the future, Canada and the United States will undoubtedly face even more hard questions about how they are to protect and manage a shared environment that covers more than 13 per cent of the world's land mass and stretches from the high Arctic to the sub-tropics.

And there is much unfinished business. Air pollution remains a serious problem and the Great Lakes cleanup is far from over.

Nevertheless, the track record of the past 70 years shows that nations can settle even difficult disputes over common resources. It is an encouraging model for a world where so much co-operation will be needed to save a shared environment.



Y. Beaulieu, Publiphoto

# New Canadian Embassy Turns Heads in Washington



Bo Polatty

**P**ennsylvania Avenue . . . the elegant Washington promenade is filled with gleaming buildings and grand monuments that symbolize the best of official America. But now this most American of American streets also symbolizes the best of Canada.

The six-storey Canadian chancery, designed by Arthur Erickson of Vancouver, has drawn rave reviews from architects, the media, Canadian tourists and Washingtonians in general.

"Arthur Erickson has given a powerful new building in a place that calls for one," extolled *Washington Post* architecture critic Benjamin Forgey.

"No doubt about it, this is one of Erickson's finest efforts to date," wrote Christopher Hume in the *Toronto Star*.

Much of the attention lavished on Erickson's tour de force is the inevitable result of the embassy's unique location. Sitting at the foot of Capitol Hill, the marble-clad chancery is the only embassy in the ceremonial heart of the city.

Interestingly enough, Canada is the only country to conform to Pierre Charles L'Enfant's grand vision for Washington. In 1791, the urban planner suggested that Pennsylvania Avenue become a centre of civic activities with embassies flanking the Mall, the park-like esplanade stretching from Capitol Hill to the Lincoln Memorial. But foreign embassies were relegated to sites far from the Mall and

Pennsylvania Avenue, and the area became a showplace of museums and monuments instead.

Dreams of a new Canadian embassy on Pennsylvania Avenue began in 1978 when Canada bought a trapezoid-shaped parcel of land for \$5 million from the District of Columbia and considered consolidating its operations under one roof.

Construction of the \$90 million building began in March 1986 and was completed in March 1989. It now houses the offices of the Ambassador, the Economic, Political and Public Affairs divisions, Defence Liaison and Administration. As well, the 26 662 m<sup>2</sup> building includes a 175-seat theatre, an art gallery, a library, a general purpose room, a staff

## The new Canadian Embassy in Washington.

cafeteria and an underground parking garage.

The embassy was officially opened by Prime Minister Brian Mulroney at a reception in May.

## Blending the Old and the New

Erickson's building blends the neoclassic elements that characterize the area and many modern concepts. The façade of smooth, unpolished Canadian marble echoes its monumental surroundings.

The Pennsylvania Avenue Development Corporation (PADC), the organization that acts as the guardian of heritage and development for the

street, had strict guidelines for Erickson and his team of architects to follow. "The embassy had to fit into the surrounding environment," explained Keith Leffler, supervising architect for the project. "PADC has some of the strictest bylaws in the world. They tell you what height the building has to be and make sure you respect the lines of nearby buildings."

"It's very unique for us to work with an organization that has so much design control and power who can tell you to change something if they do not like it. Fortunately the people liked what we were doing and they were very helpful to us."

The chancery's three wings and six freestanding 15-m columns of unpolished aluminium surround a spacious courtyard. A shallow, curving pool runs along the courtyard's west side opposite the colonnade. The row of fluted aluminium columns marches down the open side of the courtyard supporting a glass skylight. Cascades of white roses and greenery designed by Cornelia Oberlander of Vancouver soften the stone walls above the pool while hawthorn trees shade staff and visitors from the summer sun and provide pleasing lines in winter.

On the plaza's southeastern corner is the Rotunda of the Provinces — 12 columns, representing the 10 provinces and two territories, clustered around a cascading fountain and supporting the intersecting office wings above.

While the Rotunda is an obvious acknowledgment of Canada, some critics are finding Canadian symbolism everywhere — from the blue-tinted Adair marble quarried in Ontario's Bruce Peninsula which clads the building to the unique aluminium on the courtyard columns.

The courtyard opens to a park on one side and to Pennsylvania Avenue on the other. In addition, the theatre, the 20 000-volume library and art gallery are open to the public by appointment.

In security-conscious Washington, the Canadian embassy may appear refreshingly accessible. However, people should not think security is lax — the chancery is well equipped to meet the challenges of any would-be terrorist. All the windows are bulletproof, and mechanically controlled security doors control access to the office areas.

Inside, past the security areas, novel wall murals and marble floors greet the visitor,



Bo Polatty

an attractive spiral staircase winds its way to the second and third floors while glistening stainless steel doors divide the areas in which the embassy's 325 employees work.

The pièce de résistance is Ambassador Derek Burney's spacious office on the sixth floor. Floor-to-ceiling windows overlook a terrace and command an impressive view of the Capitol building and the Mall.

Another special feature is the embassy's "Canada Room," a multipurpose room which is large enough to accommodate 200 at a sit-down dinner. Set on the ground floor, it overlooks the pond in the courtyard and has two huge doors that can slide open if weather permits.

### A Showcase for Canadian Artists

The embassy also serves as a showcase for Canada's artistic community. More than 100 pieces have been acquired for display in the public and office areas of the chancery.

Gordon Smith's haunting "Rain Forest," an abstract painting representing the forests of the Queen Charlotte Islands, greets visitors in the waiting room of the Consular and Immigration Section. In the cafeteria, embassy staff eat lunch within sight of a

giant Michael Snow photograph. The outdoor pool beside the embassy's main doors will be the site of the Spirit Canoe, seven tons of bronze sculpture, created by Haida artist Bill Reid. The lobby is graced by David Ruben Piqtoukukun's Innuksuk — rough piles of rock — echoing the massive manlike figures used as landmarks by Inuit hunters. The art gallery, expected to be the embassy's most visited public area, is located one floor below the main lobby entrance. Moreover, the works of such Canadian artists as Carl Beam, Joyce Wieland, David Bolduc, and Pitseolak are featured throughout the embassy.

### The Hottest Ticket in Town

Since the embassy opened its doors, the public affairs office has been besieged with letters from service groups, professional clubs and private schools requesting tours of the new building.

"Our public areas are going to be well used," said embassy spokesperson Jock Osler. "Tourists have traditionally showed up at the door. But some haven't figured out what the new building is all about. They say: you're new. . . which museum are you?"



Bo Polatty

# NATO Celebrates Its 40th



Canadian Forces

Canadian forces in a NATO winter exercise.

On April 4, 1949, Canada's Foreign Minister Lester B. Pearson joined representatives from the governments of the United States and 10 European countries at Washington's White House. They had come together to sign a document destined to alter forever the course of European history — the North Atlantic Treaty. It created an alliance of unprecedented scope, a multinational military force of sufficient might to maintain European stability through four consecutive decades, and a security umbrella that helped pave the way for the political and economic re-emergence of a vibrant European community.

This April marked the 40th anniversary of the signing of the North Atlantic Treaty. For Canadians it was a time to reflect on the history of an international role that has kept Canada's troops on European soil almost continuously since 1939 — a chance to celebrate the success of the North Atlantic Treaty Organization (NATO) in maintaining security without armed conflict.

## Working for Peace

In the dark days following the Second World War, leaders of democratic states on both sides of the Atlantic sought a political route to rebuild Europe, without re-creating the national rivalries that had led to two horrifying global conflicts in the first half of this century.

The outlook for peace was anything but optimistic. Europe lay shattered, its

great cities in ruins, its people emotionally and economically devastated, its political institutions unstable. But conflict was not to end with the close of the Second World War. Stalin's army remained at full war-time strength. And, with a civil war in Greece, the Berlin blockade, the Communist coup in Czechoslovakia and political turmoil in Western Europe, the continent seemed poised for another major war.

Against this backdrop, the free countries of Europe and North America joined together to create an organization for common defence. Each was ready to accept the idea that keeping the peace would require extraordinary skill, hard work and commitment. First and foremost, NATO's purpose was to prevent conflict or repel it should it arise. But NATO also provided a means for continuous co-operation, research and consultation in non-military areas such as politics, economics and science.

Each partner came to the Alliance prepared to maintain peace, defend freedom, foster stable international relations and stand by the principle that armed attack against one was an attack against all. Today, the Alliance is made up of 16 democratic states, bound to preserve the common security of over 600 million people through mutual guarantees and collective commitments to defence and international dialogue in accordance with the terms set forth by the United Nations Charter.

## An Adaptable Alliance

Over the years NATO has proved to be an adaptable organization, accommodating the different perspectives of its member states and reflecting the experience of the times.

And over time as well, NATO has proved a powerful instrument in the reconstruction of war-torn Europe. It enabled the Federal Republic of Germany to regain political legitimacy and self-esteem. It provided a framework for post-war political stability which permitted a peaceful development of the European Community.

NATO's greatest success, however, lies in keeping Europe a war-free zone for 40 years. Says Joe Clark, Canada's Secretary of State for External Affairs, "In assessing the importance of NATO, it is worth noting that Europe is enjoying the longest sustained period of peace and stability since the height of the Holy Roman Empire."

## A Tradition of Commitment

Canada has played a key role in NATO since its inception. Convinced that the security of North America and Europe was indivisible, the then Secretary of State for External Affairs Louis Saint-Laurent put forward the concept of a single mutual defence system in the House of Commons in April 1948. Part of Saint-Laurent's vision was a transatlantic alliance that would bring together members not only defensively, but also politically, economically, scientifically and culturally.

# NATO



Canadian Forces, Sgt. Margaret Reid

**A mixed-nationality NATO flight crew plans its next mission.**

Canadian representatives vigorously pursued this idea in Europe and the United States. As a result, Article II of the North Atlantic Treaty — often referred to as the “Canadian Article” — reflects Canada’s vision of an alliance enhanced by non-military forms of co-operation.

Since that time, Canada’s commitment to NATO has been unshakable. In the words of Prime Minister Brian Mulroney, Canada’s quest for peace and stability “continues to be best pursued through co-operation with our allies. This is a recognition of our common history, our shared interests and our community of values. This unity of purpose is the very foundation of our Alliance, as important to our security as the concrete efforts we undertake to keep the peace.”

Canada’s unique geographic circumstances — sandwiched between the two great superpowers — mean national interest in East-West relations is particularly strong. Joe Clark underlined Canada’s vulnerability in a speech last fall. “We are in the path between the superpowers,” he said.

“Changing our policy does not change our geography and, since we can’t wish missiles away, we owe it to our own safety to maintain institutions which control them, or which bring their numbers down.”

But membership in NATO gives Canada more than a voice in the world’s nuclear club. Membership is an important component of Canadian credibility in Europe. Joint defence through NATO has also been an economical answer to Canadian defence needs: history shows that it is infinitely more costly to fight a war than to act co-operatively to prevent one.

## Winds of Change

Today, changes in the Soviet Union and some of its allied states are altering the tone of East-West dialogue. President Gorbachev’s actions in human rights and arms control have brought the world to a historic juncture. The two superpowers have agreed to eliminate an entire class of nuclear weapons and have made significant progress on a treaty to reduce their nuclear arsenals by approximately 50 per cent. A new sense of purpose is evident in negotiations to ban entirely chemical weapons. Perhaps most importantly, new negotiations on

conventional arms, aimed at establishing a secure and stable balance of conventional forces at lower levels, are now under way in Europe.

Encouraged by the progress of arms negotiations, Canada sees an unprecedented opportunity for NATO to forge a more stable international environment. But while popular opinion in the West has tended to focus on reducing nuclear weapons, Canadian analysts share concerns over the significant imbalance between the conventional forces of the Warsaw Pact countries and those of NATO. Eliminating this imbalance is pivotal to further reductions in the Alliance’s theatre nuclear arsenal. Yet each successful step in today’s negotiation process adds to the sense that East and West

are better able to resolve issues through a process of dialogue and compromise. Negotiations to reduce both nuclear and conventional forces have never had a better chance for success.

As NATO begins its 41st year, Canadians applaud its many successes, the enduring vitality of the organization and its ability to adapt to changing circumstances. The peace it has achieved has contributed much to Canada’s well-being and confidence in the future.

**NATO helicopters fly past a castle in the Bavarian Alps.**



Canadian Forces, Vic Johnson

# Louis Lortie: A Contemporary Classic

**T**he word is out: Montreal's Louis Lortie is one of the finest pianists around today. Since he won first prize at the prestigious Busoni Competition in 1984, Lortie's international career has taken a quantum leap.

A pianist of wide and various abilities, he displays great rhythmic freedom, immense contrasts and an appealing exuberance. But best of all, Lortie makes his piano sing — sometimes at the height of its power and at other times in an almost seductive whisper. To do all this requires an uncommon command of technique and a confident approach to the flow of music — assets that Lortie possesses to the full.

Louis Lortie made his debut with the Montreal Symphony Orchestra at age 13. Three years later, he took first prize in two of Canada's leading competitions: The Canadian and the Canadian Broadcasting Corporation (CBC) National Competition.

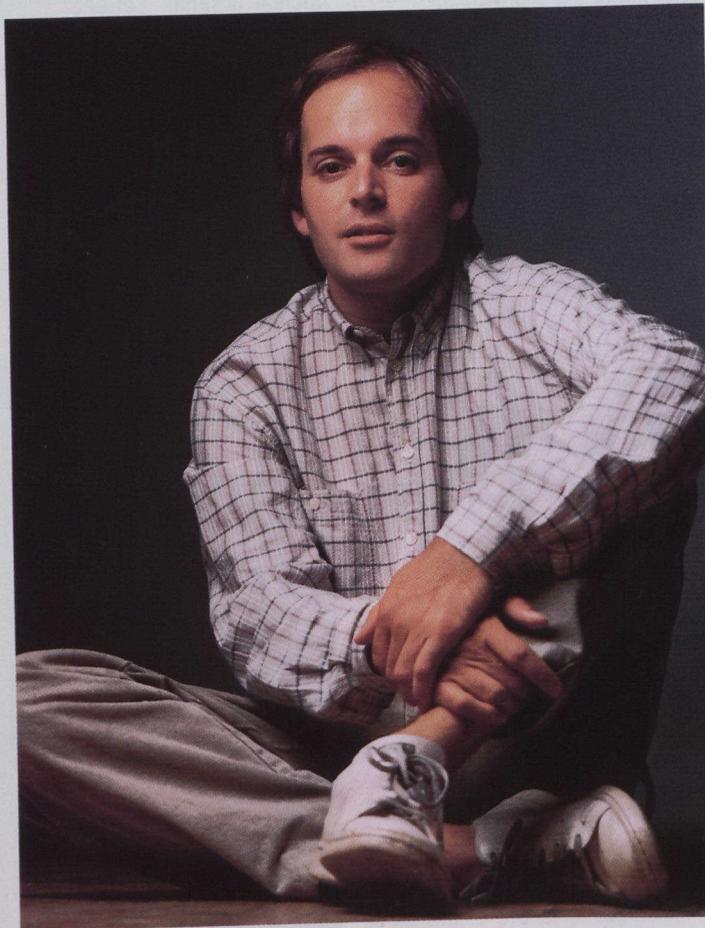
After his brilliant Toronto debut in 1978, Lortie was invited to perform as guest soloist with the Toronto Symphony Orchestra during its historic tour of the People's Republic of China. His captivating performances moved the Chinese to ask for his return in 1983 for a much-publicized concert series with the Shanghai Philharmonic Orchestra and for recitals in Shanghai and Beijing.

The following year, Lortie placed as a finalist in England's renowned Leeds International Competition where he received accolades

from critics and audience alike. Later that year, he took the gold medal at the Busoni Competition in Italy.

Since that time, Lortie has launched a career that is truly international in scope. In addition to regular orchestral appearances and recitals in his native Canada, Lortie has

Lortie, now 30, consistently gives performances that are hailed the world over. "Spine-tingling," wrote London's Geoffrey Norris in the *Telegraph*. "One of those thrilling occasions when technique, artistic imagination and an obvious love for the music all came together in a reading of rare refinement and distinction."



Sylvain Giguère

**Louis Lortie: A pianist of wide and various abilities.**

made annual tours of Europe and the United States. He also has several recordings to his credit — on CBC and Chandos labels — which have found him new audiences in many parts of the globe.

Albert Goldberg of the *Los Angeles Times* agreed when reviewing Lortie's earlier concerts at Ambassador Auditorium. "By any measure, Lortie is an extraordinary pianist. Even in the age of Horowitz, he sports breath-taking technique . . . Lortie is a poet as

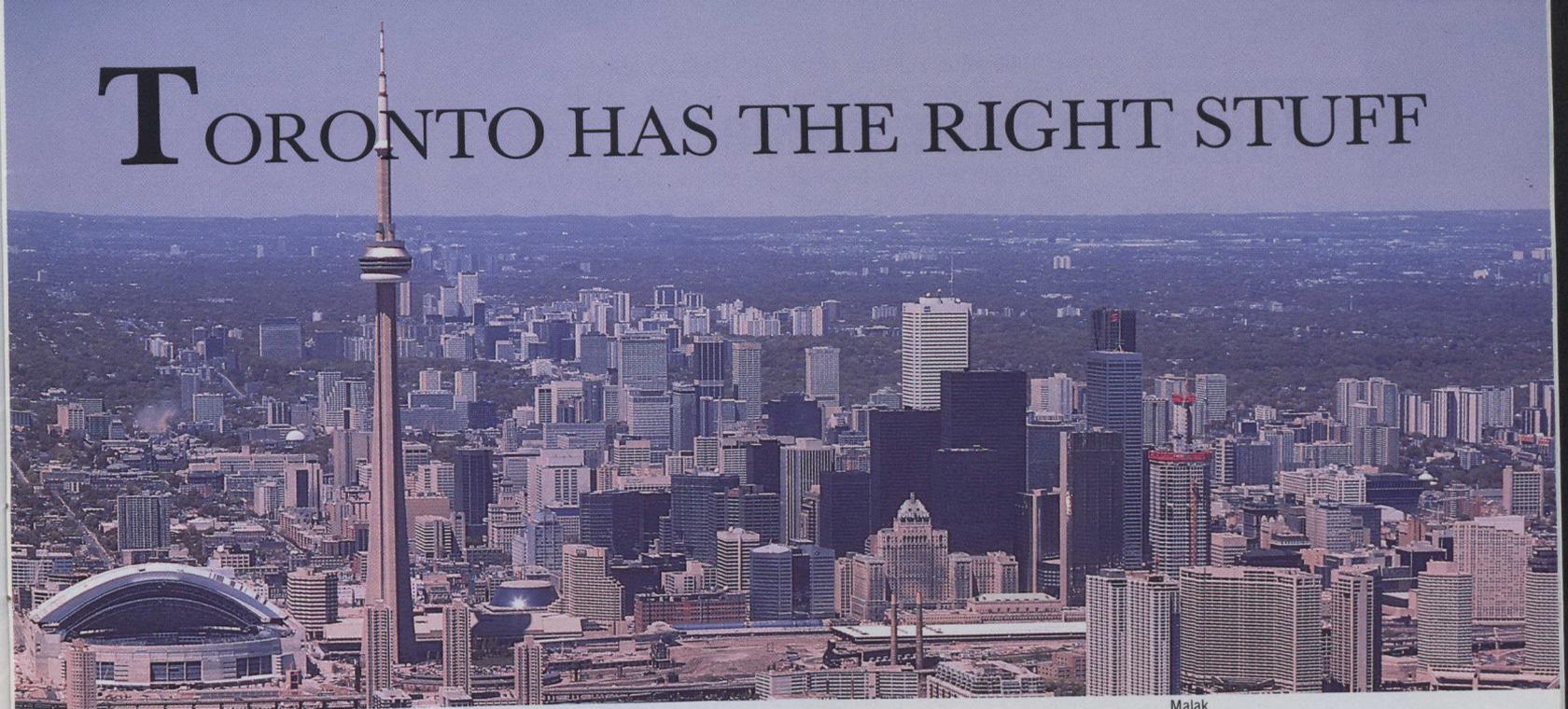
much as a virtuoso and he manifests the rare quality of commanding an audience's silent and undivided attention."

But rave reviews are just half the story. From London and Beijing to New York and Milan, Lortie's brilliance always succeeds in stunning the crowds that assemble to hear him play. Yet Lortie is not showy. If anything, this artist deals in cool, effortless understatement and knows just how to capture the imagination of his listeners without resorting to flashy, flamboyant tricks.

While things look very promising for Lortie's career, the talented pianist remains quite humble about its prospects. "You have to keep fighting to keep your place," he explains. "But most of all, you have to be careful not to rest on your laurels, as things can, and do, change very quickly."

Lortie appears to be pacing his career with considerable thought. This comes as no surprise because for Lortie there is more to life than just his music. "There is breathing, loving, reading, eating, spending time with friends," he says. "I would be miserable if I only had my career. I need all the rest for nourishment."

# TORONTO HAS THE RIGHT STUFF



Malak

**H**osting of the 1996 Summer Games of the XXVth Olympiad will offer a superb opportunity to celebrate 100 years of Olympic glory and to herald the Games at the dawn of a new Olympic centenary. Toronto is seeking this honour.

A feasibility study on the bid put forward by the Toronto Ontario Olympic Council showed:

- a high standard of sports participation and sporting facilities;
- a high cultural and artistic participation;
- an ethnic variety that reflects the goal of international co-operation;
- plentiful hotel and accommodation facilities;
- international accessibility by road, rail, and air;
- international communications links;
- an award-winning public transportation system.

## Ready to Go

Over the past three years, the Toronto Ontario Olympic Council has obtained enthusiastic support and commitments of assistance from the public and private sectors.

The City of Toronto, the Metropolitan Toronto region, the Province of Ontario, and the Government of Canada all fully support Toronto's candidature. Furthermore, the city's bid has received both corporate and government contributions in excess of \$14 million.

Equally important to a successful Olympiad, the council has the complete support of Toronto's cultural community — 150 groups active in the fields of theatre, music, dance, and fine arts.

In addition, the city's more than 70 active and flourishing ethnic communities, with their rich cultural heritages, have rallied enthusiastically to the cause.

## Lasting Legacies

Of prime importance in the bid is the plan to use existing venues which will be upgraded to Olympic standards. Sites for new facilities have been chosen to give some 30 municipalities as well as amateur sport both immediate and long-term benefits. And the plan achieves the Olympic aim of featuring sporting and cultural events.

Two key locations will be Toronto's SkyDome, a 60 000-seat indoor/outdoor stadium with a unique retractable roof, and a new Olympic 80 000-seat stadium to be built should Toronto be awarded the Games.

Toronto's plans for the Olympic Village include a central lake-side site which will be turned into an "Island of Peace," complete with waterways, courtyards and gardens. The site will provide generous space for exercise and solitude, yet still convey an intimate neighbourhood feeling.

## Toronto's Assets

Located on the shores of Lake Ontario, Toronto has a pleasant normal daytime temperature for August (the month proposed for the Games) of 25°C. Accommodation facilities are already superb, as there are 80 000 first-class hotel beds within 30 minutes' drive of the city. And with their number doubling every eight years, there will be even more tourist accommodation by 1996.

Toronto is well-served by expressways and major highways all linked to the North American continental highway

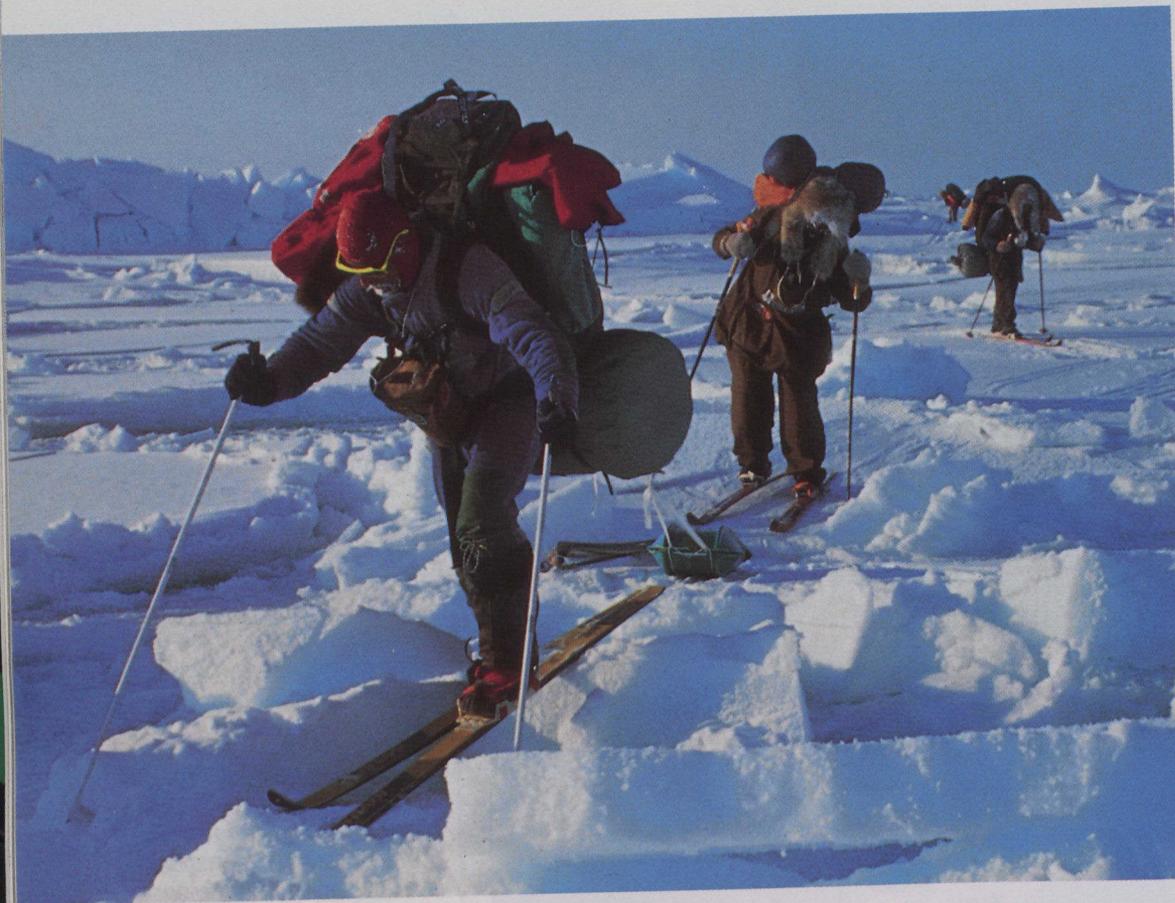
system, and three international airports are located within a 55-km radius. With convenient access by highway and by air to people living in Buffalo, Boston, Cleveland, Detroit, Montreal, New York, Ottawa, Pittsburgh, Philadelphia and Washington, Toronto is within a day's drive, or an hour's flight, of 150 million people.

As for travel within the city, Toronto's public transportation system is acknowledged the finest in North America. Moreover, the Toronto Transit Commission has prepared a report showing how the transportation requirements of the Games can be successfully handled.

With a population of three million and an economy that is among the fastest-growing in the world, Toronto is ready and able to provide the technological and human skills needed to conduct a modern Olympic Games.

Finally, one of Toronto's best attractions is its people. Dedicated to the peaceful ideal and spirit of the Olympic Games, and familiar with many different cultures, Torontonians will give visitors to the Games a warm and hearty welcome.

# Bridging the Polar Divide



Chris Holloway

The team survived three months of extraordinary hardship and crossed an entire ocean.

The Polar Bridge Expedition, a joint Soviet-Canadian skiing endeavour, was aimed at forging a symbolical bridge between Soviet Central Siberia and Northern Canada via the North Pole.

The trek was to cover almost 2 000 of the most treacherous kilometres on earth in a scant three months. The team itself included four Canadians and nine Soviets with not one individual in the group fluent in both languages. The conditions they faced were so

extreme that there could be no guarantee of success. Success, indeed survival, depended on how well the two nationalities were able to work together in overcoming a hostile environment. The expedition represented the ultimate test in cultural adaptability and good will.

Cultural differences aside, the demands placed upon the individual expedition members were formidable. Each person had to carry some 45 kg of food and equipment, and all 13 participants had to sleep together in a tent 4 m in diameter. The starting date of March 3, 1988, had them travelling during the darkest and coldest period of the year. For the first six weeks the temperature rarely got

above  $-40^{\circ}\text{C}$ . With no dog sleds or motorized transport of any kind, they relied instead on air drops every two weeks to provide additional supplies — a logistical challenge in its own right.

## Scientific Research

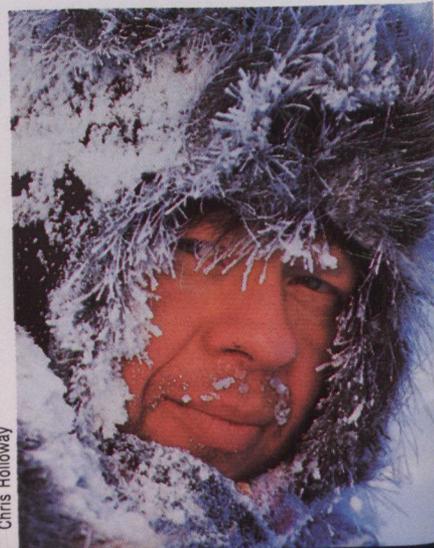
Given that humans so seldom walk this part of the planet, scientists from both countries were eager to develop environmental and scientific experiments that would contribute to the global database on changing snow and ice conditions. Routine scientific activities for the trekkers included measuring snow depths and keeping "ice logs" to determine the amount of ice present in the Arctic Ocean, the

portion that freezes annually and the quantity that leaves the ocean to melt further south.

Part of the expedition's daily chores involved taking snow samples to quantify the chemistry of Arctic Ocean snow and to study concentrations of terrestrial micro-particles useful for identifying trajectories and aerosol characteristics of the Arctic Ocean air masses. This exercise was most unpleasant as it required taking a set of samples with the hands covered by only a pair of plastic gloves so as not to contaminate the snow.

Back in Ottawa and Moscow, these specimens were analyzed for sodium, potassium, calcium and hydrogen ions. Other tests for sulphates, nitrates and similar anions contributed to previous ice core studies extending the knowledge of air and snow chemistry.

At  $-40^{\circ}\text{C}$  the weather was cold enough to freeze eyelashes together in an icy clump and turn human breath into a visible spray of ice fog.



Chris Holloway

The Polar Bridge skiers tested a Russian theory that a second magnetic pole existed on the Soviet side of the geographic pole. The expedition carried a "magnetometer theodolite," a device, used for tracking the shifting magnetic pole, that was invented in the late 1940s by China's Dominion Observatory. While no evidence of a second magnetic pole could be found, these experiments were most valuable in filling a geomagnetic "gap," since the expedition had crossed the only spot on earth where no such observations had been made previously.

### Northern Knights

Despite arduous training camps in both the Soviet Union and Canada to prepare for the gruelling trip over the top of the world, there were concerns about possible equipment failure, injury, thin ice, and polar bear attacks. As if these were not enough, the first two weeks would be especially harrowing given the strong currents near the Soviet coastline and the incidence of "leads" (open water caused by fractured ice).

Travelling in twilight conditions on ice which was not "land fast," the expedition team bridged ice floes and conquered pressure ridges (formed when large pans of ice crash together). For eight to nine hours each day, skiing for 50 minutes, then resting for 10, each man consumed 8 000 calories in a fat-based diet.

During the first leg of the trip, which ended with an elaborate celebration by both countries and the world press at the North Pole, the expedition was severely tested in two separate instances.

The first incident occurred when a meal was being prepared on portable stoves powered by "white gas." The seal on one of the stoves broke, turning the cooker into

an enormous blowtorch that set the tent on fire. With all the dexterity that 13 large men in heavy parkas could muster, they stamped out the flames. Richard Weber, the Canadian expedition leader, and Anatoly Melnikov, the Soviet radio operator, managed to throw the stove outside the tent, but not before fire had consumed the tent flap over the door. With the wind howling and a bone-chilling temperature of  $-42^{\circ}\text{C}$  to contend with, they hastily cut a new tent flap from parachute material. After an agonizing 30 minutes, the new flap was in place and their collective anxieties subsided.

froze onto his polar suit. Fortunately the Gore-Tex fabric was waterproof and fitted him well. He stayed completely dry and soon the team was once again on its way north.

### Agony of the Feet

The ice on the Canadian side of the Pole carried its own treachery. Having spent the first part of the trip in constant twilight, the skiers were now forced to contend with constant daylight. On clear days the sun was relentless, its fierce glare reflected off the ice, searing the faces of the polar team. Those days that were overcast brought

### Arrival

At last on May 31 the expedition reached Ward Hunt Island. To mark the end of their journey the expedition members symbolically stepped forward as one onto Canadian soil.

In a brief radio message to Canadian Prime Minister Brian Mulroney they stated "... the second span of the bridge is complete, we have stepped off the ice at 1:35 pm, June 1, 1988. We hope our expedition will serve as an example of what co-operation and harmony between our peoples can achieve. We thank you for your support."



Chris Holloway

**The Polar Bridge Expedition** symbolically linked Soviet Central Siberia and Northern Canada.

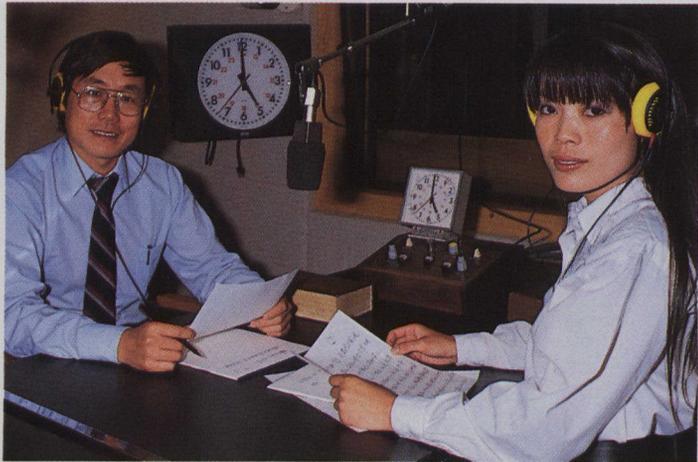
An even more dangerous event occurred during a day's skiing. While testing the thickness of some questionable ice, the Soviet physician, Dr. Mikhail Malakov, fell through into the water. He was grabbed from behind by expedition leader Dimitry Shparo and hauled to safety, but the water immediately

whiteouts robbing the landscape of any normal definition by which one could reasonably navigate. Falls were commonplace and frustrations mounted.

Canadian Richard Weber confessed in his diary that these were "... the most depressing days of the entire trip." With the temperatures rising and such inconsistent visibility, this period held the highest potential for peril. The ever-present possibility of encountering open stretches of water that could not be crossed only added to the struggle of putting one foot in front of the other for nine hours a day.

On January 9, 1989, in the St. Catharine's Hall of the Grand Kremlin Palace, Soviet Prime Minister Nikolai Ryzhkov presented the Canadian team members with the Order of Friendship of Nations, the highest decoration that a non-Soviet citizen can receive. Canadian Ambassador to the Soviet Union Vernon Turner, who attended the ceremony, summed up the achievement when he said, "... we often think of the polar ice as dividing our two countries, when in essence that can no longer be true."

# Canada's Voice to the World



Michel Ponomareff

**Announcers-producers  
Zhao Li and Chen  
Zhigiang.**

**E**ach week 16 million people listen to Radio Canada International (RCI). And each year listeners respond with some 50 000 letters. The numbers are impressive, for they demonstrate that this medium-sized service has a large-sized impact upon the world of international broadcasting.

RCI is the shortwave service of the Canadian Broadcasting Corporation (CBC). Shortwave radio spans continents and oceans, as well as national borders, to reach its audience. RCI began operations near the end of the Second World War to bolster the morale of Canadian men and women serving overseas and since then has established a respected place among the 100-plus broadcasters now beaming an ever-growing number of signals throughout the world.

The service broadcasts 200 hours each week in 12 languages directed at eight target areas: Central and Eastern Europe, Asia and the

Pacific, Latin America, the Caribbean, the Middle East, Africa, Western Europe and the United States. In line with Canada's growing links with Asia and the Pacific, RCI recently began daily broadcasts in Japanese and Standard Chinese.

RCI's mandate is to explain Canada to the world. The basic 30-minute program contains Canadian and international news, commentaries, interviews, reports and documentaries that reflect the political, economic, social, cultural, artistic and scientific life of the country.

Like its CBC parent, RCI strives for balanced, objective programming. However, even greater care must be taken in the shortwave medium because the divergent points of view expressed daily by Canadian political and business leaders, interest groups, newspapers, magazines, radio and television stations are unavailable to the average shortwave listener. In addition, there is no guarantee that the listener tunes in to consecutive broadcasts. So, while journalists and producers may focus on one side of a story, they will also put it

into context for listeners by summarizing the opposing viewpoints.

International broadcasting is an expensive operation, due in part to the cost of constructing and maintaining huge antennas. And these antennas, once in place, cannot possibly serve all target areas equally well. RCI's transmitters, for example, are in Sackville, New Brunswick, a location on Canada's Atlantic coast best suited for transmissions to Europe, the United States and South America.

One way of cutting costs and increasing signal strength is by sharing transmitter time with other broadcasters. Under this arrangement one broadcaster transmits a program by satellite to another broadcaster with facilities located near the target area, which then relays the program by shortwave. RCI has relays in England, Portugal, China, Austria, Japan and Montserrat.

RCI's monitoring station near Ottawa, Ontario, the national capital, demonstrates another aspect of international co-operation. Each week the station monitors 500 hours of programming beamed to North America and sends reception reports to the broadcasters. These broadcasters in turn report how well RCI's signal is received abroad. This shared information guides broadcasters in the choice of frequencies agreed upon at international meetings.

Listeners in many countries also can hear about Canada on local radio via recorded

programs. A favourite item is "Pick of the Pops," a monthly cassette sampler of the latest in Canadian pop, rock, rhythm and blues, country, jazz and folk music. Cassettes containing topical items in English and French are also sent to stations in Africa and the Caribbean and in Japanese to Asia and the Pacific. RCI recordings are available in many university libraries and at Canadian diplomatic missions around the world.

The programs are not limited to foreign listeners. In recent years, shortwave receivers have become smaller, better and easier to use. These improvements have encouraged a growing number of Canadians travelling abroad to keep in touch with home by listening to RCI rebroadcasts of such popular programs from the domestic network as "World at Six," "As It Happens," "Présent" and "Radiojournal."

If you would like to join 16 million other listeners, write for a free program schedule to RCI, P.O. Box 6000, Montreal, Canada H3C 3A8.

**As well as shortwave broadcasting, RCI produces disc and cassette recordings for radio stations around the world.**



RCI

# CROSS CANADA CURRENTS

## Tickling the Ivories in Africa

Canadian pianist Oliver Jones pulled off a rare coup in Africa last spring. Playing the masterpieces in his field, including his own, Canada's newest jazz ambassador established an identity that endeared him to some 10 000 new listeners, and some 20 000 tapping feet.

Oliver Jones and accompanists Dave Young on bass and Archie Alleyne on drums endured the sweltering African heat as the trio brought full-capacity crowds to their feet in Nigeria, Egypt and the Ivory Coast.

As modern jazz goes, all the concerts were superb. Both the audiences and the critics raved. Performing pieces by the likes of George Gershwin, Duke Ellington and Oscar Peterson, along with Jones' own material, The Oliver Jones Trio mesmerized audiences with virtuosity and talent.

Born in jazz-rich Montreal in 1934, Oliver Jones began playing tunes on the piano when he was only two years old. At the ripe old age of five, he made his first public appearance — a concert at his family's church. Jones, who has the rare gift of perfect pitch, began formal classical training at age seven and two years later began studying with Daisy Peterson — the sister of Canadian jazz-giant Oscar Peterson, Jones' childhood friend.

Oddly enough, Jones did not seriously venture into jazz until he was 46 years old. Till then, he had spent the better part of two decades on the road as accompanist and musical director for Jamaican pop-singer Kenny Hamilton. Prior to that, Jones performed with various musicians in

clubs and hotels in the Montreal area. But 1980 was the turning point when Jones settled back in Montreal and became convinced that he could make a living playing jazz.

Since 1982, the soft-spoken pianist has toured internationally, made numerous recordings and quickly risen to become one of the most critically acclaimed players in jazz today.

According to Jones, his 1989 African tour was "the most memorable experience of my life." Even six months later he is still reeling from it. "Learning first-hand of African culture and visiting the countries where jazz originated was so important to me," said Jones. "My ultimate pleasure was exchanging ideas with African musicians and comparing the directions jazz has taken since the drumbeats of Africa many centuries ago."

## First Biodegradable Magazine Wrapper

Last fall *Harrowsmith*, a Canadian magazine known for its investigative environmental articles, became the first magazine in North America to use a biodegradable mailing wrapper. Since then, other magazines and businesses have been seeking information about the see-through pouches.

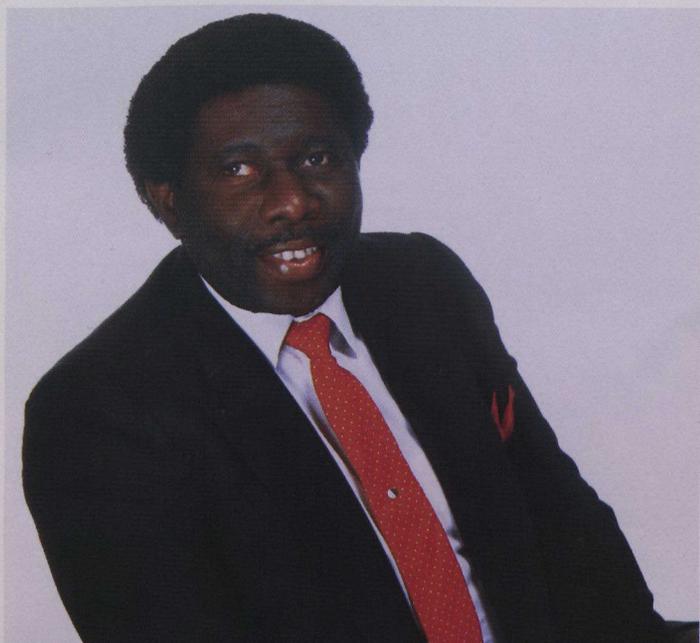
The plastic film used for the pouches is made with a special cornstarch additive produced and marketed by the Canadian St. Lawrence Starch Company Ltd. of Mississauga, Ontario. The company acquired the rights to the patented technology in 1985.

The additive speeds up the natural decomposition of plastic, reducing the process to between 2 and 6 years, from the usual 200 to 400 years. Some plastic films with high levels of the additive have decomposed in as little as 44 days.

The biodegradable plastic contains cornstarch, vegetable oil, and polyethylene. The starch and the vegetable oil play an important role in the decomposition process. The starch attracts and is consumed by micro-organisms. The resulting holes throughout the plastic weaken it and increase the surface area exposed to the environment.

The vegetable oil is an auto-oxidant. It reacts with the natural metal salts found in soil and water to produce peroxide. The peroxide attacks the bonds within the plastic, causing further disintegration. Once the bonds are broken, living organisms such as bacteria, fungi, and actinomycetes can consume the remaining material.

Although the product has been around for several years, 1988 marked the first time it was available in a form suitable for making mailing wrappers. *Harrowsmith* started using the wrapper as soon as it was commercially produced.



Archie Alleyne

## Montreal to Host Summit of World's 25 Largest Cities



Michel Ponomareff

**A** jury representing eight world metropolises has selected Montreal as the site of the third Summit of the World's 25 Largest Cities. The first two conferences were held in Tokyo in 1985 and Istanbul in 1988.

Montreal Mayor Jean Doré is pleased to be hosting so prestigious a conference. "It is a rare opportunity to have in Montreal the mayors of the world's great cities, on the eve of our city's 350th anniversary," said Mayor Doré.

Montreal has gained an international reputation by hosting events such as the 1967 World's Fair, the 1976 Olympic Games and the Floral Festival of 1980, among other conferences and meetings. It is a cosmopolitan city where more than 100 communities of various backgrounds and

**J**ean Doré, Mayor of Montreal.

cultures co-exist with Montrealers of French and English origin.

The mayor sees the summit as another excellent opportunity to showcase his city to the world and to invite visitors to the 1992 celebrations marking the 500th anniversary of Christopher Columbus' arrival in America.

These summits were instituted by Governor Shunichi Suzuki of Tokyo in 1985 in order to bring together representatives of the world's major cities. Problems faced by modern mega-cities are discussed, and solutions sought to the major challenges that cities will face in the twenty-first century.

The two-and-one-half-day conference will take place during the summer of 1991.

## A Hospital Designed with Well-being in Mind

**T**he Walter C. Mackenzie Health Sciences Centre in Edmonton, Alberta, looks and feels like a shopping mall, but is really a hospital. And although the Canadian medical centre may resemble the Centre Georges Pompidou in Paris, it is an entirely different institution.

Working on the principle that people recover more quickly in familiar and pleasant surroundings, Toronto architect Eberhard Ziedler created a hospital featuring a spectacular indoor garden. The concept was inspired in part by Toronto's massive Eaton Centre, one of his earlier designs.

Mr. Ziedler, who specializes in designing buildings suited to colder climates, worked closely with a multidisciplinary medical team to better meet the needs of everyone concerned. His objective was to create an environment that would alleviate patients' fears and speed their recoveries. By offering a variety of services (hairdresser, shops, cafeteria, public telephones) he hoped to encourage people to move about more freely.

Visitors to the hospital are immediately struck by the monumental entrance leading to what appears to be the headquarters of a thriving commercial enterprise. To the right is a large, ultra-modern amphitheatre with the latest in audio-visual equipment — a reminder that this is a university facility.

A glass-enclosed, U-shaped, interior gallery provides an indoor view for half the patients, while the rest enjoy a view of the outdoors. Rooms are located on three floors, with no more than 2 beds per room, and with 18 beds in each medical unit.

Colourful walls, bright draperies and wall-to-wall carpeting raise patient morale and reduce the noise level.

The main floor and indoor terraces, however, are open to patients and visitors alike. A hair salon, post office, toy shop, card and souvenir shop, newsstand, bookstore, candy store, snack bar and tea room are among the services available. Glass elevators provide access to all floors without depriving users of the spectacular view.

On one of the terraces, a grand piano awaits a musician's touch. A covered walk links the hospital to a 125-bed hotel for people who simply need tests or for families of hospitalized patients.

As a university facility, the Walter C. Mackenzie Health Sciences Centre is involved in the latest medical research and technological developments. Kidney transplants have become a routine procedure, and more than 50 heart transplants and 3 heart-lung transplants have been performed over the last six months.



Pat Marston

Research focuses on four main areas: aneurysms, nuclear magnetic resonance imaging, cardiac mapping and transplant immunology. Dr. Philip Halloran, the multiple transplant unit's medical director, stresses the importance of immunology research to further understand various illnesses, including diabetes and lupus.

Construction of the Walter C. Mackenzie Health Sciences Centre was funded through the Alberta Heritage Savings

Trust Fund, which was established by the provincial government with oil and gas revenues. The second phase of the centre was officially opened in 1986.

Barbara Nyland, who works in the Research and Technology Department, states that an enrolment of 1 500 students a year has brought the hospital to the forefront of medical education in North America.

## Canadian Diving Company Plunges into New Technology



Mark Atherton

**A** Canadian diving company is making the underwater world more accessible for those who want to see some pretty fish without strapping on awkward scuba equipment.

International Hard Suits Inc. (IHS) is a British Columbia company founded in 1986 to develop, manufacture and market the Newtsuit — a

revolutionary one-person diving suit that protects the diver from pressure and avoids the need for decompression. Weighing 275 kg and giving the operator a passing resemblance to the Michelin Tire man, the Newtsuit allows divers to work as deep as 300 m with unprecedented mobility.

Not only is the Newtsuit the world's most advanced atmospheric diving suit, it is also the most cost-efficient. Diving to 300 m using conventional diving techniques can cost in excess of C\$270 000 for one 12-hour dive. But with the Newtsuit, diving costs can be cut to a mere C\$7 050. This tremendous saving is possible because the Newtsuit requires no decompression time; the crew size can be reduced from 22 persons to 4; and there is no need for the expensive breathing gases that are normally required in deep-sea diving.

For the scientific and research community, the Newtsuit now allows divers to observe and document historical wrecks, deep-water fauna and flora, and rare events as they occur beneath the sea. For the offshore oil and gas industry, it

permits human intervention for construction, inspection, or sub-sea well completion. And thanks to a revolutionary new fluid-filled rotary joint, the Newtsuit is so flexible that it allows up to 75 per cent of normal dexterity.

The Newtsuit is the brainchild of Vancouver-born diving pioneer Phil Nuytten, president of IHS and a recognized authority on diving technology.

In 1966, Nuytten and a group of Vancouver business people co-founded Can-Dive, the world's largest diving company which has since achieved numerous "firsts" and technical accomplishments in the diving industry. After working with the cumbersome "hard" diving suits of the 1970s,

Nuytten saw the need for a more effective, economical and flexible suit. "The problem with other suits was that the joints were depth sensitive — the deeper you went, the stiffer they got," he said in an interview.

A public company listed on the Vancouver Stock Exchange, IHS delivered its first two Newtsuits to Japan's Fuji Co. Ltd. last December at a price of C\$300 000 each. Today, the company has orders for 22 more Newtsuits worth about C\$7 million.

## A School with a Difference

**R**ick Hansen is perhaps best known for his 1986 Man in Motion Tour — a round-the-world wheelchair marathon that brought him to 33 countries on four continents and raised millions of dollars for spinal-cord research. But the real legacy of his achievement, what Hansen has been most committed to, is changing people's attitudes towards the disabled. Last spring in London, Ontario, Rick Hansen was on hand to open a new school — a school with a difference.

With his wife Amanda by his side, Rick Hansen arrived to join in ceremonies naming the school in his honour. But there's more to the Rick Hansen School than just being named after the Man in Motion.

With an elevator, wide doors and appropriate washroom facilities, it's a school that can be easily used by a disabled child. According to school principal Bob Harvey, "Any child who happens to be physically challenged, living in our school district

can now come here rather than go off to another facility outside of the community."

Rick Hansen had insisted that the first school with his name be barrier-free for the disabled. Said Hansen, "We should be planning for a society that embraces disabled persons as full and equal partners of the community. This school has taken that leadership role by creating a totally accessible environment." The new Rick Hansen school is the first public school in Canada to fulfil these objectives.

After the ceremonies, it was clear that Hansen had made a considerable impression. According to Jordan McCaughen, a 10-year-old girl who attends the school now named in Hansen's honour, "I think he's really had an impact on people who are disabled and people who thought that disabled people really couldn't do anything." And indeed he has.



**O***péra de la Bastille*



60984 81800

The new Opéra de la Bastille in Paris, designed by  
Canadian architect Carlos Ott.