

ZEPHYR



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Atmospheric Environment Service
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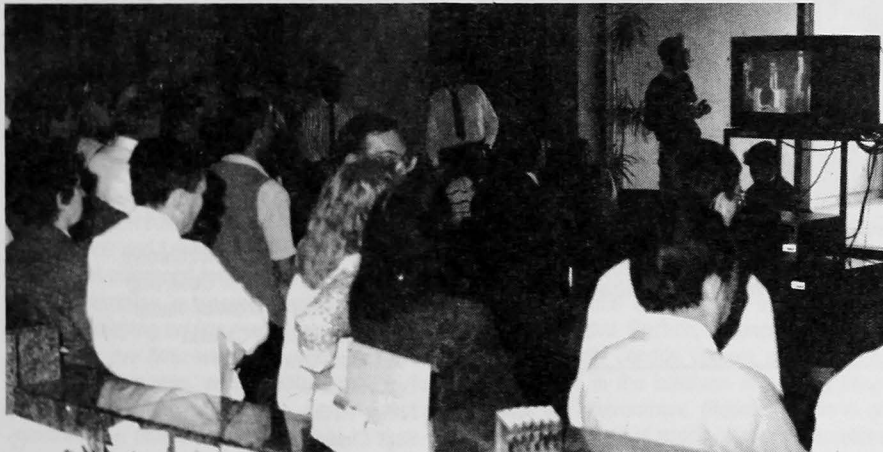
AES Employees obtain unique Preview of Government Green Plan Strategy

As former Environment Minister Lucien Bouchard outlined steps for implementing the government Green Plan on March 29, employees at AES Downsview headquarters were able to watch the entire three hour media event on closed-circuit television.

Arrangements had been made for the ministerial presentation to be made at a televised press conference in a Montréal hotel. Receivers were set up in Halifax, Toronto, Winnipeg, Calgary and Vancouver to Allow local media to watch proceedings and ask the Minister questions.

having the proceedings relayed to AES staff in the building. With less than a day to go, the idea seemed impossible. AES had no satellite TV facilities of its own and Remo could not obtain assistance from the media consultants advising the Minister's office.

Remo then went directly to Larry Steinman, vice-president of CanCom Teleconference Network (CTN), the company involved in installing the communications hook-up. After a brief discussion, Mr. Steinman agreed to send a couple of engineers to Downsview later that afternoon to survey the site. Their report was



Personnel at AES Downsview, huddle round TV screens in the lobby to see former Environment Minister, Lucien Bouchard, announce the national challenge of the Government's Green Plan. Thanks to a last minute decision, AES was linked up by satellite to a nation-wide TV teleconference.

Special, last-minute arrangements made at Downsview, enabled all AES employees to watch the event in which the Minister vowed to have Canada become the world's most environmentally friendly country by the year 2000. With TV monitors set up in different parts of the building, the Downsview operation was considered unique. It came about largely as a result of some quick thinking by Remo Massaroni, who is a project manager for the Green Plan within AES Central Services Directorate in Downsview.

The day before the Minister's announcement, Remo, who was formerly telecommunications advisor to AES Weather Services Directorate, had been asked about the possibility of



Remo Massaroni

The Green Plan — a brief Roundup

Public awareness of the government's proposed Green Plan dates back to last February when Finance Minister Michael Wilson said in his budget speech, "It would be irresponsible to leave our children a legacy of environmental neglect. In Canada and abroad, we are witnessing a major change in people's attitudes towards the environment."

On March 29, former Environment Minister Lucien Bouchard emphasized that the Green Plan would be a "national challenge" requiring participation by all levels of society. There was a commitment by the year 2000 to make Canada "the industrial world's most environmentally friendly country", and to achieve this, he urged all Canadians to evaluate and change how environmental decisions are made."

The unveiling of the Green Plan coincided with the publication of a document called "A Framework for Discussion on the Environment", which among other things proposed action on such environmental issues as waste management, environmental emergencies, toxic substances, global warming, ozone depletion, acid rain and air quality.

The launching of the program was followed by a series of public information sessions across Canada to inform Canadians about the Green Plan discussion paper and hear their concerns about the environment. Beginning late May, consultation meetings were held in provincial and territorial capitals. More than a dozen federal ministers were scheduled to attend the various consultations. The meetings were seen as a unique opportunity for Canadians and their governments to work together and establish a consensus on the priorities for the environmental action plan.

Following a wrap-up session, a document will be issued synthesizing the findings and this will be followed by the release of the definitive report: *The Green Plan: A National Challenge*. The full action plan should be tabled in the House of Commons in the fall. Implementation of the Plan will then be carried out from coast to coast with the assistance of all Canadians.

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Canada

International Women's Day at AES Downsview

March 8, International Women's Day, was marked at AES Downsview by a forum thoroughly examining the issues facing women both in the work place and in their individual lives during the 1990s.

The forum, attended by almost 100 people, was held in the AES Downsview Auditorium. There were four keynote speakers who addressed different aspects of the opportunities and challenges presenting themselves to women during the decade.

Phil Aber, as acting ADMA, was the first speaker. He reviewed the difficulties confronting women in today's work force, both inside and outside the public service and asked for a thorough reexamination of attitudes by both managers and fellow workers. Mr. Aber added that, despite restraints and cutbacks in government programs, opportunities for advancement or for satisfactory careers existed for those women willing to equip themselves for the job

through training and a willingness to maintain flexibility in an era of rapid technological change.

Marie MacPhee, the second speaker, related some of her experiences as a woman within AES who had used the Education Leave process to move from the technical ranks to a professional level. She was now graduating from the MOC course, the in-service training program qualifying AES employees to graduate as meteorologists.

Eve Sanson of the Employee Assistance Program spoke about coping with the pressures of everyday life for women during the 1990s and provided some techniques to help manage one's time to the best advantage. She also offered some hints on how to achieve a degree of marital equilibrium.

Nancy Cutler, director of Climate Operations for the Canadian Climate Centre, outlined some of the highlights of her career and looked towards the future with an eye on the

real challenges facing women in the work force between now and the end of the century.

The four presentations were followed by a question and answer period during which such topics as employment equity, handling the new technology, on-the-job stress and the provision of adequate day care were addressed.

The master of ceremonies and organizer was Louis Vigneault of Human Resources (Downsview).

Another important Women's Day event at AES Downsview was the mounting of a collage on the theme "Women at Work". Many photographs were displayed showing the varied activities of women who work for AES or for supporting organizations. The pictures covered a wide range of occupations — from Assistant Deputy Minister to scientists, computer operators, trainers, weather observers, financial officers, personnel administrators, cafeteria support staff and day care workers.



Principal participants at the International Women's Day seminar, held at AES Downsview, admire the specially mounted photo collage presenting the theme: **Women at Work**. They are, left to right, Eve Sanson, Phil Aber, Marie MacPhee, Louis Vigneault and Nancy Cutler.

August 1, 1988: Heritage Day celebrations were washed out in Calgary, which received 65 mm of rain in 24 hours. It was the wettest August 1 in Calgary's history.

August 3, 1985: After more than 380 mm of rain fell on Parkman, Sask., 2 brothers made the best of a bad thing and went waterskiing on their wheat field.

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Green Plan Preview cont'd.

positive. By 7 am next morning CTN had placed a three meter receiving dish near the front entrance of the Downsview building. Meanwhile, Remo borrowed three standard TV monitors and a giant screen from the AES audio visual unit. Two of the monitors were placed in the main lobby, another in the cafeteria and the large screen was installed in the main training classroom.

As a result of this fast action, several hundred Downsview employees were able to watch the Minister present the Green Plan strategy live and follow the national press conference. Apart from the six centres in the official hook-up, Downsview was the only other location, inside or outside the government, to receive this major closed-circuit broadcast.

Mark Trueman, who is overseeing work on natural hazards as part of the AES Green Plan initiative, says that the Downsview satellite

link with the Minister was worth the effort because it offered many AES people revealing insights into government thinking on the Plan that could not have been obtained entirely by reading the official publication, "Framework for Discussion on the Environment". Besides describing the overall environmental responsibilities of Canadians during the next decade, the publication zeroes in on several "Action" areas of direct concern to AES — environmental emergencies, atmospheric change, global warming, ozone depletion, acid rain and air quality/toxic air pollutants.


Finally, by watching the broadcast and hearing pointed questions on the environment from the media, AES personnel became more conscious of the give-and-take nature of the Green Plan strategy and why it was essential to hold a series of public consultations across the country before implementation this fall.

ZEPHYR

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Science and Science Writing Cover the Environment

Ample proof that Canadian science and Canadian science writing are becoming increasingly aware of the environment was demonstrated at a series of meetings held in Québec City between May 13 and 18.

As keynote speaker addressing a joint meeting of the Canadian Science Writers' Association (CSWA) and l'Association des communicateurs scientifiques du Québec (ACSQ), Professor Digby McLaren, president of the Royal Society of Canada, said that all global change problems are interconnected. Exponential population growth, increasing world reliance on fossil fuels and a major decrease in the number of plant and animal species were cited as the three main problems facing the world today. Prof. McLaren, who is director of the Royal Society Project on Global Change, added that future climate change was another important part of the puzzle. He described sustainable development, a concept highlighted by the Brundtland Commission, as "desirable", but warned that it must be preceded by ecological and economic stability. In conclusion, he suggested that media be more discerning when covering the challenge of global change. They should face the issue as a whole rather than concentrate on isolated factors.

Prof. McLaren's speech was followed by presentations from a panel of veteran national and international journalists, all of whom had major involvement with the environment. Panelists were James Murray, producer of CBC's *Nature of Things*, Françoise Monier, international reporter for the Paris-based magazine *L'Express*, Mary Hagar, Washington-based correspondent on scientific and medical issues for *Newsweek* and Louis-Gilles Francoeur, an environment columnist for Montreal's *Le Devoir*.

Discussion subjects included the difficulty of keeping environmental issues fresh in the public eye (Interest in acid rain has diminished, for example, while public attention is focussing on global warming). Another topic covered the different approaches to environmental reporting among the various media. Mr. Murry regretted that so much television these days was served up as entertainment or followed rules laid down by the commercial advertisers. M. Francoeur expressed reservations about presenting environment news in a sensational form and thought it was important for scientists to establish the "burden of proof" before presenting issues like the depletion of the ozone layer.

The conference then split up into workshops on sustainable development, toxic waste, acid rain and global warming. The latter workshop was of particular interest to AES. Henry Hengeveld, AES advisor on Carbon Dioxide-related matters, debated with Ross Howard, political correspondent for the *Globe and Mail* and Kai Milyard, spokesman for Friends of the Earth, on the overall likelihood of global warming. Opinions of panelists and workshop participants ranged from the possibility that world temperature might take a sudden quantum leap,



DOE/AES personnel participate at recent joint sessions of the Canadian Science Writers' Association/Association des communicateurs scientifiques du Québec in Québec City. The theme is Environment in the Headlines and Eleanor Kulin, Communications Director, Conservation and Protection Service, seen left photo, explains the role of Environment Canada Communications in dealing with the media. Henry Hengeveld, AES advisor, CO₂-related matters, seen on the far right hand photo, discusses the implications of mass-media coverage of global warming issues.

to the idea that major climate change was a "non-issue."

Even when the Science Writers held professional development seminars on their own day before, the environment figured prominently in their discussions. For instance, Eve Savory, CBC TV's science correspondent, described environment reporting as the hardest part of her work. Lorraine Graves, freelance TV science producer and reporter told how science stories were mostly reduced to one or two-minute "sound bites" or to trivial "infotainment". Michel Rochon, science reporter for CBOFT, Radio Canada, Ottawa, said he did not wish to be in the business of scaring people about the environment. (Reports of one in one quadrillion parts of toxicity in water sometimes had made headlines.)

Environment Canada was also represented at these development sessions. Eleanor Kulin, director of Communications, Conservation and Protection, (formerly holder of a similar position with AES), attending a session about public relations people and science journalists, said her role was more than informing the public on government environmental policies and actions. Government communications people now work at the decision-making level and also seek to be pro-active towards both media and public. Ms. Kulin also participated in an acid rain seminar for science writers the following day.

The science writers' meetings coincided with the 58th annual conference of the French Canadian Association for the Advancement of Science (ACFAS), also held at Laval University. The Association, which includes about 8,000 Quebec scientists from universities, government and private industry, covers an enormous range of topics from hard science to the humanities.

This year there were no fewer than 10 ACFAS sessions on the environment, ranging from Reconstruction of Paleo-environments at a time of Global Warming to Environmental Ethics and the Spirit of Ecologism. Many interesting and unusual viewpoints were aired. For example, a debate between an economist and a biologist on Sustainable Development, revealed that there is a wide gap between the two disciplines. Economists were largely unaware of ecological principles and it was suggested that they alter some of their beliefs in order to come closer to biology.

Indoor air pollution

Our well-sealed homes can trap potentially noxious air that could include carbon monoxide, formaldehyde and radon, not to mention dust, smoke, pollen, fungi, molds, bacteria and viruses.

- Regularly use outside-vented kitchen and bathroom exhaust fans to counteract over-weather-sealed homes.
- Likewise, regularly open windows throughout the year to ensure fresh air ventilation.
- Be sure to properly ventilate rooms used for hobbies that require the use of materials containing hazardous chemicals.
- Use natural-fibre, chemical-free carpets and upholstery; and non-hazardous cleaners, solvents, waxes, paints, varnishes, etc.

From *What We Can Do For Our Environment*



A Brief History of Weather Observing in Canada

The 150th anniversary of continuous weather observing in Canada reminds us that people have always been concerned with weather and climate. Even the oldest civilizations had their weather signs and proverbs, usually associated with astronomy, harvests or religion. Some climate information exists from the early Oriental, Greek and Roman civilizations, but taking systematic weather observations only became possible after the invention of basic instruments like the thermometer, the barometer and the anemometer.

The history of weather observing in this country becomes clearer if we try to explain what weather, meteorology and climate mean,



Weather observing in the 1850s – this formally dressed observer reads maximum and minimum thermometers while a companion notes down data in the log book.

Weather is the condition of the atmosphere at any particular time and place. Meteorology is the scientific study of the atmosphere. Climate is average and/or extreme weather conditions at any place or region. Weather observing is often called meteorological or climate observing. Climate data for specific times and places is often referred to as historical data.

Instrumental weather observations have been recorded in Europe for about 350 years and for around a century less in North America.

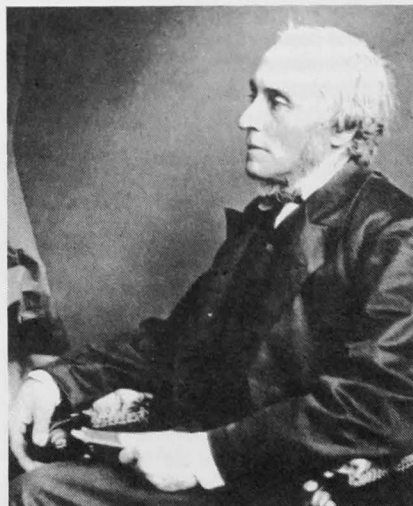
In Canada, casual remarks about the weather were recorded by Jacques Cartier as early as 1535-36, but the earliest climate observations to be compiled systematically were collected by Dr. J. F. Gaultier at Quebec City from 1742 to 1758 and subsequently published in France. Twenty years later, around 1769, two English scientists came to Fort Prince of Wales

(Churchill, Man.) to take several kinds of observations connected with their work. Their climate observations for the period were later published. Then, in the 1770s, climate observing began at several posts of the Hudson's Bay Company in Western Canada.

During the 1830s, the British Imperial Government, at the urging of British and European scientists, ordered the establishment of several magnetic and meteorological observatories. Canada was selected as a site for one of these and in the winter of 1839-40, it was temporarily located in the barracks of what is now called Old Fort York. About eight months later, observers from the Royal Artillery moved to a proper observatory in a log cabin on the grounds of King's College, now the University of Toronto. On September 5, 1840, with all equipment installed, climate observations began and have continued at or near this site ever since.

In 1853 the military observers withdrew and the Observatory became the responsibility of Canada. Financed by the government, the station was supervised by the University of Toronto, an arrangement which lasted for about 20 years.

Shortly after his arrival in Toronto as director of the Observatory and professor of Meteorology, George Kingston was struck with the vision of making the site a "climate centre" for the whole country. From here, assistance could be given to a number of professional people such as doctors, lawyers and teachers interested in voluntary observing work. In this way, the data would be collected and an archive of Canadian climate data maintained. Kingston contacted such people as Lieutenant E. D. Ashe of the Quebec Time Observatory and Dr. Charles Smallwood, a physician of St. Martin near Montréal. Smallwood sent observations to Toronto



Professor George Kingston, superintendent of the meteorological service to 1880.

for publication in the **Canadian Journal** as early as 1852. A decade later, he moved his observatory to McGill University in Montreal where he became a professor. William Craigie, a doctor practicing in the Hamilton area and C. J. McGregor of Stratford were two early Ontario observers corresponding with the Toronto Observatory.

Perhaps Kingston's most innovative move was to help Education Department officials in Upper Canada organize a weather observing program in grammar schools. After an unproductive start in the late 1850s, ten schools in southern Ontario took climate observations over a 20-year period beginning in 1867 and these data still provide an excellent base for Ontario climate observing. In the Lower Provinces, Gilbert Murdock of Saint John, New Brunswick, and Frederick Allison of Halifax, both seasoned observers, began to correspond with Kingston in the later 1860s.

Within a few years of Confederation, Professor Kingston was in correspondence with many amateur weather hobbyists in the four provinces. He then began to lobby the new Dominion government to finance a national meteorological office where the different observing programs could be standardized and a central repository for the climate data maintained. A small grant for this purpose was obtained in 1871 but almost immediately, Kingston was swept up in "weather telegraphy". The Americans had just started a storm warning program and needed weather data telegraphed to them from Canada every day. In exchange for these weather telegrams, the Americans were willing to provide warnings of storms that might affect Canada. The Department of Marine and Fisheries, the responsible government office, was eager to participate in the new storm program, so Kingston felt obliged to co-operate. Work began in early 1872 with regular daily exchanges of data with the Americans.

Although deeply engrossed in weather telegraphy, Professor Kingston also made rapid strides in developing climate observing networks. Principal Stations were established at Montréal, Halifax, Saint John, N.B., Fredericton and Ottawa in 1871. Later, stations were opened at Winnipeg in 1872, at Spence's Bridge, B.C. in 1873, and at Quebec and Kingston, Ontario, in 1874. At these posts, complete observations were recorded three times a day and the observers were paid a small salary. Most climate observing, however, was done voluntarily at ordinary stations by farmers, lawyers, doctors, housewives, clergy, etc. At first, these stations were all in the eastern provinces, but climate observing stations were opened throughout the West as settlement progressed in the 1870s and 1880s. The total number of climate observing stations "in correspondence" with Toronto grew slowly from 129 in 1871 to 154 by 1880.

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A Ghost of a Building?

by Stanley Frost

At the end of a long summer day, when the sun is sinking behind the western shoulder of Mount Royal and the lower campus is bathed in light reflected from the towering cliffs of glass on Sherbrooke Street — if you stand behind the Redpath Museum and a little to the left — you can see dimly outlined in the great picture windows of the Arts/Leacock annex, a neat, modest grey-stone house, with a sturdy octagonal tower. It is the ghost of a building that stood on that site for a hundred years.

If you stand back a little further, you can see the quadruple flights of white-painted, wooden steps that led from the Arts terrace to the building on the bluff above. The tower was first erected in 1863 to house the remarkable instruments of Dr. Charles Smallwood, M.D.



This building, on the campus of McGill University, now demolished, served between 1862 and 1873 as the observatory of Dr. Charles Smallwood, Quebec's first climatologist.

They were not the medical instruments which one might expect of a country sawbones. Smallwood had settled seven or eight miles out of Montréal at St. Martin, Ile Jésus, and had built himself a complete weather station. In 1841 he began recording temperatures (four times daily, exactly on the hour), humidity, precipitation, ozone levels, wind direction and velocities. He also faithfully recorded the arrival and departure each year of migrant species. How could he do all this and maintain a country practice? There can be only one answer: he trained his wife to take the readings.

McGill was so impressed that it gave him an honorary degree and an equally honorary professorship. In 1863 they built him the McGill Observatory — the tower on the bluff — and Smallwood and his instruments moved in. The daily records continued without a break. Presumably the honorary professor exchanged his rural practice for a suburban one, and Mrs. Smallwood had to trudge across campus rather than her own backyard. But help was coming.

From 1871 the McGill Observatory was jointly supported by the U.S. Department of War and the Canadian Ministry of Marine. Smallwood could even afford a student assistant.

Two years later Charles Smallwood died, a far-sighted, unsung pioneer of regular meteorological observations? His student, **Bunty MacLeod**, had been allowed to room in the Arts building, so that he could be on hand to take the daily readings. He succeeded Smallwood in the observatory, and in due time became a family man, a professor of geodesy, and a respected scientist. The university built him a house joined to the tower, and there he and his family were privileged to live. Over the years the tower was raised another storey and the house was enlarged to support a growing family.

Professor C. H. MacLeod put Canada on the map, literally — he determined the exact longitude of the McGill Observatory as being $W.4h.54'18.67''$ and thereby improved the figures for the whole North American continent. He also kept time for all of Canada, including the Nepean Point noon gun in Ottawa. Even the National Railways ran on McGill time. The Dominion Observatory took over the noon gun in the late 1920s, but the railways still received the McGill signal until the late 1960s. After that, it is said, the railways no longer ran on time but were content if they stayed on the rails. But the McGill bells, at five to the hour and on the hour, are still governed by the McGill clock, only now it is an atomic one.

Of course, progress must be served. In its one hundredth year the observatory was demolished to make way for the great bulk of the Leacock building — how he would have hated to have his name associated with the dissolution of the past! But the instruments and the records were transferred to the Department of Meteorology, and the weather station on the east campus still maintains nearly a century and a half of meticulous observation. If the "greenhouse effect" really is going to work in Canada, McGill will be one of the first to know.

If you stand in the deepening dusk and watch those long flights of wooden stairs, you may see a slim, bonneted and cloaked figure come carefully down towards the lower campus. No, it is not Mrs. Smallwood returning from taking those readings; it is one of the Miss MacLeods on her way to join a snowshoe tramp across the mountain. Ghostly seasons and Daylight Saving Time seem somehow to have got out of kilter; it has something to do, I am told, with the precession of the equinoxes.

Should you be inclined to doubt any of the foregoing information, I can refer you with complete confidence to Emeritus Professor of Meteorology Svern Orvig. I heard it all from him some years ago at a meeting of the James McGill Society. Well, almost all.

Mr. Frost is director of the History of McGill Project.

Cont'd. from Page 4

A Brief History

Frederic Stupart became director of Canada's Meteorological Service in 1894 and did much to expand the observing network in western Ontario. As a result, daily weather forecasts issued in the East since 1876 became available in the West by the turn of the century. Stations were established in the Yukon and Northwest Territories and by the 1920s there were more than 500 observing stations in the country.

In the 1930s more stations were required to serve the rapidly expanding needs of aviation. After World War II, there was a marked increase in the number of stations as Canadians became much more weather- and climate-conscious. In 1990, the 150th Anniversary year, there are about 3000 observing stations from coast to coast.



The first stone observatory near the site of Convocation Hall was erected on the University of Toronto campus in 1855.

August 3, 1976: Hurricane *Belle* tracked northward across Long Island, N.Y., to Gaspé, Que. Precipitation lasted 72 hours, from the 8th to the 11th. Edmunston received the greatest amount, 179 mm.

August 15, 1877: A tornado scattered fenceposts along the Waterloo road, near Guelph, Ontario. Observers compared the scene to a badly constructed corduroy road.

Installing New Brunswick Radar — enjoyable, frustrating

There's nothing that Electronic Maintenance supervisor Ken Reynolds of Atlantic Region enjoys more than overseeing and participating in the installation of major new weather radar equipment. But the pleasure can be marred by the occasional "snafu".

His experience at Sussex, New Brunswick, was "typical". He was pleased when all the equipment, including the pedestal, receiving dish and electronics arrived safely by truck at the site (30 km from town) one cold January day and was securely placed in storage.

He was looking forward to the installation a couple of days later, but learned that the huge 75-ton crane that was to do the heavy lifting had suffered a flat tire en route to the site and would have to be parked in town overnight because cranes were not allowed to travel on the highway during darkness. Mr. Reynolds just happened to be driving by a Sussex motel when he spotted the crane driver and operator desperately trying to find overnight accommodation but being turned away because, due to some major sporting events in the area, there was no room at the inn.

The local radar maintenance contractor, offered to guide the crane slowly through the night to the radar site, driving a bulldozer. The 25 km journey took nearly an hour and the crane driver was unable to get above third gear. Due to ice and snow on the hill leading up to the tower, the bulldozer had to tow the crane for the last 100 metres.

Operations began in earnest on a cold, snowy Friday with winds gusting to about 30 km an hour. Plans for installation seemed to be going fairly well until a "goof" occurred with the obligatory hand radios used to communicate with the crane operator. Some static prevented the lifter from hearing a vital command. While installing the lifting sling on the radome prior to its removal, the operator misunderstood a stop order and attempted to lift the dome while it was still bolted down! No damage or injuries resulted, but it was a close shave, causing Ken Reynolds to comment "I expect the cumulative blood pressure of the four persons on the tower probably resembled the national debt in magnitude." To top things off, the continuing snowfall and the minus 4 degree temperature combined to produce a centimetre-thick layer of ice on the tower deck.

There were a few more glitches during the remote control testing, mainly faults with the radar remote control systems. Ken dismisses it all as a "mis-wire of the received modem input cable in the DVIP/RCU." Perhaps more serious was



Installing the New Brunswick weather radar. The only real snag occurred when the crane operator had trouble removing the radome because it was bolted down.

the fact that the power supply in the remote circuit failed because of an internal short performance handover to the maintenance contractor, about three weeks later, the transmitter power supply suffered an oil leak. But all the above is just "par for the course" for Ken who says that on the whole the installation went remarkably smoothly. But he adds somewhat ruefully, "If I had my druthers, summer would have been my preference."

August 29, 1583: Canada's first recorded marine disaster took 85 lives when the *Delight* was wrecked on Sable Island during a storm.

AES at popular Sportsman Show

AES Ontario Region set up displays for the first time at the popular Toronto Sportsman Show on the grounds of the Canadian National Exhibition between March 16 and 25.

The main items exhibited were a weatheradio display, a current weather and forecast display (surface analysis and prog., plus satellite imagery) and lastly, an information booth containing a wide range of pamphlets on the Environment, Climate, Weather and Forecast services.

The Ontario Region display was installed in conjunction with the Metropolitan Toronto and Region Conservation authority which occupied adjacent space at the show. Phil Chadwick, meteorologist and AES exhibit coordinator, estimates that most of the 200,000 people who visited the Sportsman show saw the AES exhibit, which attracted the crowds largely because of some large, impressive tornado pictures.

Mr. Chadwick added that, among other things, the AES exhibit aimed to inform and educate visitors who are oriented to outdoor activities such as campers, fishermen, boaters, hikers, etc. It demonstrated ways to easily access weather information by means of Weatheradio and ATADS-recorded phone messages. The display also suggested safety precautions to be taken in the event of dangerous weather and provided general information on the role of AES.

Although the 1990 AES entry at the Sportsman show was considered an experiment, Mr. Chadwick says he is very pleased with the results and hopes to make the display a regular annual feature.



Phil Chadwick, meteorologist, Ontario Weather Centre and coordinator of the AES Exhibit at the Toronto Sportsman Show stands by a panel on weather forecasting.

The 80s stormy Decade in Canada

The 1980s proved conclusively that many regions of Canada continue to risk death and destruction due to severe local storms.

According to Mike Newark, severe weather meteorologist and tornado expert for Environment Canada's Canadian Climate Centre, a grand total of 760 tornadoes hit the country during the decade, an average of 76 per year. Out of these, some 670 tornadoes were officially recorded, and two were considered major natural disasters: the so-called Barrie tornado in Southern Ontario which took 12 lives on May 31, 1985 and the Edmonton tornado of July 31, 1987, Canada's worst, which killed 27 people.

Mr. Newark's severe weather summary for the 1980s coincided with the announcement of this year's World Meteorological Day theme: "Natural Disasters — how Meteorological and Hydrological Services can help". Commenting on this theme, proclaimed on March 23 by the World Meteorological Organization in Geneva, Switzerland, he says, "In parallel with the increasing threat from severe local storms Canada's mechanism to monitor them has also enlarged." Among steps taken across the country to monitor storms, he mentions the inauguration during the decade of 12 new weather radar stations, including an experimental, state-of-the-art Doppler radar near King City, Ontario. He adds that the volunteer weather watcher network, established in Ontario and Quebec in the late 1970s, was expanded to cover Quebec, the Maritimes, Saskatchewan and Alberta. Now totaling approximately 5000 people, the network watches for severe thunderstorms and reports them to Environment Canada. Lastly, 40 new Weatheradio stations were installed to help broadcast severe weather warnings as quickly as possible.

Summarizing others forms of severe weather during the decade, Mr. Newark says that since statistics on severe local thunderstorms

began to be kept nationally around 1984, at least 60 Canadians have lost their lives due to this kind of atmospheric disturbance and more than 400 have been injured. It is also estimated that about a billion dollars in crop and property damage is suffered each year.

The 1980s also witnessed the most damaging hailstorm on record, occurring in Calgary, Alberta, on July 14, 1981 and causing losses of \$100 million. Hailstones as large as grapefruit were observed almost every year somewhere between the Rocky Mountains and Quebec.

Two extreme rainfall events occurred during the decade which vie for the record of the most rain from thunderstorms in Canada. An estimated 380 mm fell near Parkman, Saskatchewan, in less than 24 hours in August 1985. In addition, there was torrential rain in Essex County near Harrow, Ontario, on July 20, 1989. An estimated 450 mm caused widespread floods, property damage and crop losses.

At the opening of the first severe weather season of the 1990s, Mr. Newark says there is no evidence to suggest that severe summer storms were more numerous during the 1980s than before. In fact since the last century there has been a major killing tornado in Canada about once every five years. He does say, however, that there was a great increase in public interest in such events during the decade and details of the impacts of severe weather became much more widely known.

Finally, Mr. Newark is fairly optimistic about proposals to monitor storms across Canada in the 1990s. He says that plans are underway to install a chain of Doppler weather radars to enable forecasters to quickly spot developing tornadoes and thunderstorm downbursts. But he adds it is also up to individuals to make sure they are well informed about the probability of severe storms, to listen for weather warnings and to know what actions to take when hazardous weather strikes.

What's the Weather like on July 11?

More notable weather events have occurred in Canada on July 11 than on any other day of the year. Here are some of the significant incidents that have occurred on this date.

1854 Heavy winds capsized several small boats and blew others onto Toronto Island. The schooner **Duke** sank with the loss of five people.

1888 A tornado struck the area between Montréal and Quebec City, killing 53.

1911 After a prolonged period of hot, dry weather, forest fires broke out in northern Ontario. Fanned by extremely high winds, the fire spread rapidly and engulfed the towns of Cochrane, South Porcupine, Pottsville, and Goldlands, killing more than 200 people. Many people died seeking shelter in mines and lakes.

1927 An intense storm, bringing hail, tornadoes, heavy rain, and lightning, created havoc across all three Prairie provinces. Crop damage in Saskatchewan alone was estimated at \$2 M. Three were killed and hundreds were injured by flying debris.

1932 At Rouyn, Quebec, two miners were killed when lightning struck nearby dynamite caps.

1969 Unusually heavy rainfall, connected with a slow-moving weather system, struck the Maritimes. From the 11th to the 14th, Saint John recorded 198 mm of rain.

1970 Several violent hail storms slashed across central Alberta bringing winds as high as 120 km/h and hail the size of tennis balls. Trees and crops were severely damaged.

1978 A downpour of 64 to 135 mm in 24 hours struck Edmonton and caused flooding, washouts, and mudslides. Losses were placed at \$43 M.

1983 A heavy 50-70 mm rainfall triggered several major mudslides near Revelstoke, forcing closure of the Trans-Canada Highway. One section of railway track was covered by a mudslide 150 m wide and 2 m deep.

If ever there is a day to have your insurance paid up, July 11 is it!

Environmental Partners Fund

The Environmental Partners Fund got off to a good start in British Columbia. The first round of E.P.F. projects approved by the Minister was announced on January 25. For the September '89 application deadline, seventy eight E.P.F. projects were approved across Canada with fourteen projects and \$283,916 to British Columbia and the Yukon. A.E.S. Regional Director General (Pacific Region) and C.O.R.E. Chairperson Pat Pender signed the first agreement on behalf of Environment Canada/Pacific Yukon Region on February 1.

One of the first projects to receive approval and partnership funding in B.C. was initiated by the student association of the British Columbia Institute of Technology. For this project, the Environmental Partners Fund committed \$9,710 towards a one year campus recycling

program. The student association's goal is to collect sixty tons of bond and ledger paper and three hundred and fifty thousand aluminum tins by the end of 1990. Students will be urged to use recycling bins and hand carts placed around the campus. Pick-up and sorting responsibilities will be performed by volunteers of B.C.I.T.'s student association.

This project and others like it are cooperative examples of local groups taking action in protecting, enhancing and restoring the environment at the community level. The Environmental Partners Fund is an effective way to stimulate partnership and to get individuals personally involved in cleaning up the environment.

This is but one example of EPF projects being organized across the country.

August 17, 1878: A severe rain, wind, and hail storm crossed southern Quebec between St. Lambert and Laprairie, destroying trees and damaging several barns. "Pieces of ice" 2-3 cm in diameter were reported.

August 18, 1876: A rare marine tornado crossed St. Paul's Island off the northern tip of Cape Breton Island. One man was killed and five buildings were totally destroyed.

CSD Searches for Identity with "Olympic-Pizza" Model

Which AES Directorate has four disparate branches and one "centripetal" director general?

The answer is Central Services Directorate (CSD), which is responsible for AES Ice, Training, Telecommunications and Data Acquisition branches.

Upon assuming his duties as DG last fall, Phil Aber pondered this situation and came up with the idea of basing the operation of his Directorate on the "Olympic-Pizza" model.

By way of explanation, Mr. Aber said in a memo to all CSD staff, "I was taken by the cooperation and excellence of the Olympics with their five interlaced rings, analogous to the four Branches and the DG's office and the nutrition and satisfaction of pizza with its solid base and toppings reflecting the essential underpinning that CSD provides to the remainder of AES, other government services and to the Canadian public. Thus, the "Olympic Pizza model".

Mr. Aber then cited other comparisons between CSD and the Olympic-Pizza Model; e.g. the Olympic motto: "Citius-Altius-Fortius" (Faster, Higher, Stronger) as a good example that CSD employees already follow. He described pizza itself as — "international in its origins and acceptance, the most widely consumed savoury pastry in Canada", the number and variety of toppings determined by one's state of appetite and finance. Being a natural combination of excellence and sustenance, there was no need for steroids to get the job done! He went on to invite comments and contributions in developing the model from all CSD staff and announced a March awards ceremony in the AES Downsview auditorium for the winners.

The first, second and third prizewinners were awarded pizzas and had parts of their contributions quoted by the DG. Mr. Aber said the response was good. Letters arrived from all four Branches as well as from a few non-CSD employees. "Comments covered areas ranging from the more serious organizational issues to the very humorous and all were tastefully linked to the model", he added.

Zavie Miller, of Ice Branch (Ottawa) who



Phil Aber, director general Central Services Directorate, attends pizza presentation ceremony with Olympic-Pizza contest winners, Ed Holtzman, right, and Gary Grieco.

has attended three Olympic games (Mexico '68, Montreal '76 and Los Angeles '84), won first prize and wrote "One observation that stands out is that only the 'gold' counts. No one remembers who finished second or third. It will be a challenge to build this thought into the Olympic Pizza model. How do we inspire people to do our gold medal performances?"

Second prize went to Ed Holtzman of Communications Software Section, who wrote that "the true value of our model will be measured in terms of its practical application". Claiming canned mushroom toppings to be the blandest part of any pizza, he warned the "master chef" that anything he is able to do to limit the quantity of mushrooms "will go a long way toward improving the 'palatability' of CSD."

Since some CSD staff expressed confusion as to the true connection between the Directorate and the Olympic-Pizza model, it is just as well that third prize went to Gary Grieco

Four of the stanzas go:

"When our DG
Starts to sing
About Pizza and Olympic Rings
Lucky Fella (Lucky Fella)

It's a sign we're all here
Full of life
Full of cheer
It's a Bella (It's a Bella)

As we train the MTs
With their maps
If you please
It's exciting (It's exciting)

If you're looking for ice
It's on top — It's a slice
And it floats . . ."

Chess and Meteorology have Something in Common

Last February during the major annual chess tournament held as part of the varied Québec Carnival activities, Laurent Foucreault, officer in charge of the Québec Weather Office, won second prize in the Intermediate category.

He has participated in the tournament, organized by the Ligue d'échecs de Québec, twice before, and this was the second time he had won the same prize. He was been playing "serious" chess for the past eight or nine years and is a regular player at the Charny chess club on the south shore.

Mr. Foucreault says that a successful chess player needs to supplement his games with plenty of study. Even before a four-hour club tournament, he spends at least six hours poring over books and analyzing situations on the vital first 20 moves on his home computer.

The OIC knows only a few AES chess players, but sees some close parallels between the art of chess and meteorology. For example, he says both require an ability to analyze various scenarios and come up with the most efficient solutions to a problem. Just as adjust-

ments must be made by the forecaster while the actual weather evolves, adjustments in strategy must also be made by the chess player while the game progresses.

He hopes to do even better at next year's Carnival tournament and before then, enter for some qualifying rounds that could promote him to chess master level. He doesn't ever envisage becoming a province-wide or national champion because his heavy work load prevents him from undergoing the kind of preparation required for this lofty status.

IDRC Holds Sharing One Environment Conference

The International Development Research Centre (IDRC) held a two-day conference in Toronto March 6-7 on the theme: South and North, Sharing One Environment.

As part of its global research agenda, IDRC invited about 20 project leaders from developing countries to present papers on various initiatives wholly or partly funded by this External Affairs-backed international research agency.

Subjects ranged from reports on heavy metal river pollution problems in South America to ways of protecting the threatened environment of Mount Everest Park on the Nepal-Chinese border.

Two papers on water and air pollution problems in developing countries were of particular interest. Dr. Prinya Nuatalaya from Thailand and Raymond Yong of McGill University, Montréal, described how overpumping of aquifers under the city of Bangkok (Thailand) was causing earth contraction, flooding, contamination of drinking water by infiltration of seawater and the sinking of entire areas of the city. The project leaders added that researchers had discovered ways to prevent the sinking of Asia's most important coastal cities, something that

would benefit millions of urban Asians in the 21st century.

The air pollution paper, presented by Dr. Amara Pongsapich, director of the Social Research Institute, Chulalongkorn University, Bangkok, Thailand, showed how increasing use of modern fuels in homes and by urban traffic is contributing to major air pollution problems in 13 Asian cities. Research teams have been taking air samples and once these are analyzed, the researchers will attempt to work out solutions for limiting negative environment effects.

The seminar, sponsored jointly by IDRC and the Canadian Science Writers' Association, showed a much greater awareness among overseas aid researchers of the need for sustainable development and considerable knowledge of the basic principles of climate change.

AES involvement in IDRC projects has been minimal until now, with one notable exception — the Camanchaca project, supervised by AES Cloud Physics scientist, Dr. Robert Schemerauer, which demonstrated drawing potable water for Chilean villages from fog clouds over the arid coastal mountains.



At the IDRC North-South seminar in Toronto, left to right, Ken MacKay, senior program officer, Environment Section; Dr. Amara Pongsapich, director, Social Research Institute, Chulalongkorn University, Bangkok and Jenny Frazer, moderator, Canadian Science Writers' Association.



James Dudley, flanked by Gord Shimizu, former d.g. AES Central Services Directorate and Jim Alexander, former director, Training Branch, receives the James Percy Award on the occasion of his graduation from the MOC11 course in May. There were 32 graduates in all.

Watercolors

by
D. W. Colwell

*Liquid strokes on an azure field
Distant, wispy, sometimes streaming
Patterned layers, yet they yield
Golden sunbursts beaming.*

*Fluffy cotton chasing shadows
Blown by wind, but seldom windblown
Snow white over, grey below
Quilts of eiderdown*

*Full, flaccid, bloated, lowering
Rainy season, rising pools
Wet, pouring, flooding, growing
Damp nights of cool*

*Tall anvils ever threaten
Climbing, flashing, growling, churning
Rainbows glow, and guard ranks brighten
White, peaceful, sleeping*

*Dawn and dusk the colors gleaming
Renewing palettes, moving hues
Changing brushstrokes ever streaming
Crimson below the blues*

BOOK REVIEW

SPACIOUS SKIES by Richard Scorer and Arjen Verkaik. (Printed in Portugal by Resopal for David & Charles Publishers.)

For many years, when I have felt the pressures of life most keenly, my eyes have been drawn to the vistas of the sky, where the sight of a rainbow has calmed me, and that of a sunburst has renewed my energies. I am one of the skywatchers mentioned in **Spacious Skies**.

Skywatchers the world round will recognize this book as a work of love. Those who study the science of meteorology will see it as a reference that will bring to students an understanding beyond simple cloud charts and words in a text. The book certainly expanded my knowledge of convective processes — and I have been a skywatcher for many years.

The authors have developed a successful combination of textual explanation, graphical representation of the process involved and an excellent series of photographs to clearly illustrate very complex phenomena. The combination is used on the one hand to explain the physical processes in general, and elsewhere to clarify specific cases, particularly the origin of clouds. The authors have covered a wide range of phenomena in the book, even bringing in a chapter on condensation phenomena and another on optical phenomena.

Although the authors have included a varied choice of topics, and have given an exhaustive treatise of convective processes and low level phenomena, I felt there needed to be a more extensive and organized approach to

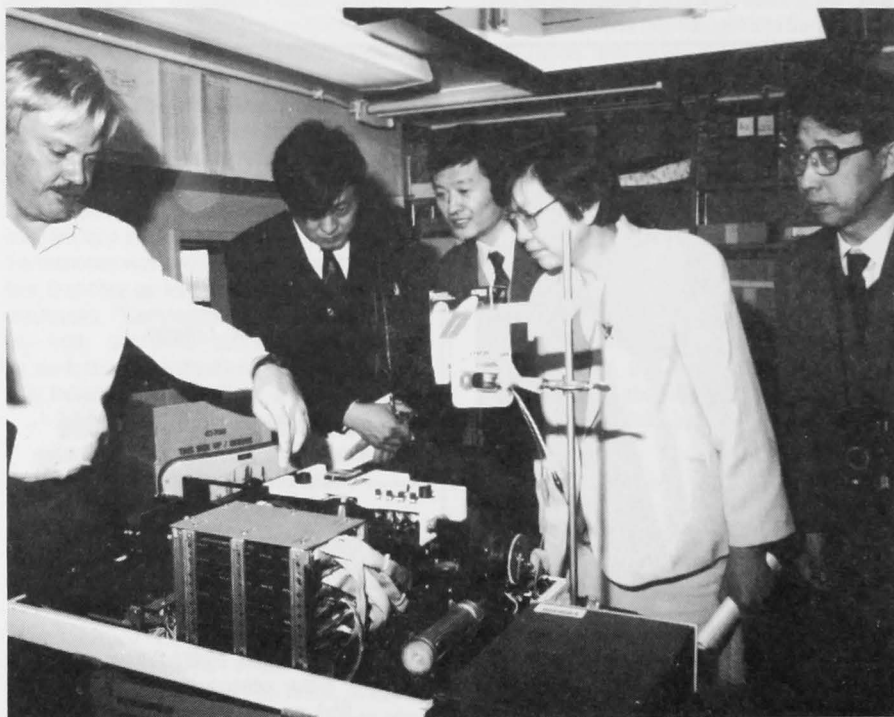
stratus type clouds, and to middle and high level clouds generally. There is a great deal of attention to how local severe storms develop, but it is not as easy to find a description of major storms. Perhaps the full range of cloud systems associated with these larger storms as well as the cloud forming processes and large scale motion connected with them should have been included.

The photographs are plentiful and rich in detail, and I found the use of satellite photographs to illustrate points and to show beautiful patterns, very instructive.

The book is an excellent example of what can be achieved by two people with a real understanding of their work: a successful cooperation by two skywatchers at home in their subject.

David W. Colwell

Chinese Visitors at AES



Dr. Jim Kerr (left) of Experimental Studies, demonstrates equipment to Chinese meteorological officials touring the research facilities at AES Downsview. They are left to right: Mr. Li Zechun, Mr. Xiao Younghsheng, Mme Chen H. Guofan and Mr. Li Ji.

Flying Club appreciates personal Touch

Keith Collins is a surface weather observer at the Hope Airport Weather Station. He had an interesting experience in the early morning hours one day last June. On the way to the weather station Keith noticed a truck parked along the side of the road near a place where a number of glider-type aircraft were parked. Noting that this was an unusual place to park, he recorded the vehicle's licence plate number and drove closer to the gliders to have a closer look.

He observed two individuals vandalizing one of the gliders and told them that they might just as well come down to the weather station and wait for the R.C.M.P. to arrive, as he had recorded their plate number and that the police were on their way. The individuals fled and Keith then phoned the R.C.M.P. and reported the incident along with a description of the vehicle, complete with licence number. The R.C.M.P. arrived at the station within an hour with the two suspects for a positive identification.

Keith was required to appear in provincial court as a Crown witness and as a result of his testimony the two vandals were convicted and ordered to make restitution.

Keith received a letter from the Vancouver Soaring Association with the following commendation, "We are all most grateful for the initiative and bravery you displayed which curtailed a spree of vandalism that could have resulted in far more damage than is now the case. Your prompt action at detaining the culprits was certainly above and beyond the call of duty and is much appreciated by our members."

The Assistant Deputy Minister, Elizabeth Dowdeswell presented Keith with an "Award of Excellence" when the A.E.S. Management Committee was in Vancouver earlier this year. His demonstration of initiative and good citizenship should be an example to all public servants.

SAFETY FIRST

I would like to take this opportunity to update you on several safety and health developments in AES over the past year and what we can expect over the next few years. We have procured an additional PY in order to have a national safety officer position separate from the Downsview one. Bob Sharples from the Atlantic Region is the acting national safety officer. Staffing to fill the position permanently is underway.

We now have a nominated safety coordinator in each region as well as at Downsview and CMC. In addition, there is usually a representative from TCTI Cornwall and Ice Central in Ottawa. Through conference calls and constant telephone communication we are striving to vastly improve the AES safety program. In addition, we will hold our 2nd annual safety workshop in coordination with the University College of Cape Breton annual occupational health and safety workshop.

In this fiscal year, we will establish a national inventory and disposal plan for hazardous wastes in AES. We will also be looking at developing a training program for those who

work with moored buoys. These are in addition to the normal training, inspecting, and monitoring activities which regional and headquarters safety personnel carry out. In order to have a truly national program, we all have to work together in planning and carrying out our activities.

Bob and I attended safety meetings in Cornwall recently. An officer from Treasury Board painted a scenario of changes we might see occur over the next few years. These include:

- mandatory paid education leave for safety committee members;
- stronger safety committees, with power to carry out recommendations;
- refusal to work initiated by unions, not just by individuals;
- ticketing of employers/employees for safety infractions (this is now in force for those who contravene non-smoking regulations);
- prosecution of managers by employees or unions without the intervention of regulatory safety officers.

So, as you can see, it looks as if we should

have some interesting times ahead. It is incumbent on all of us to ensure that the workplace is a safe and healthy environment for all.

As a last note: National Health and Welfare states that there is no evidence to prove that VDTs are a health hazard due to radiation emissions. They recommend strongly that lead aprons be eliminated from the workplace. In fact, a lead apron is not only harmful to the wearer's back, but can cause undue physical pressure and oxygen shortage to the unborn child of a pregnant woman. If an expectant mother is still worried about radiation emissions, the manager should make every attempt to find alternative tasks for her away from the VDT. It has been found that the most severe problems with VDTs are ergonomic: eye strain, boring repetitious work with few breaks from the screen, badly organized work stations, and furniture unsuited to computer equipment. An excellent booklet is "Health and ergonomic aspects of video display terminals" by NHW. Request a copy from your NHW occupational nurse (Olga has a supply).

Jan Glover

"Dump Yard is the bad place"

When whole classes write in for information on the Environment, AES is always impressed . . . sometimes amused. Some two dozen grade five students from Kipling, Saskatchewan, studying Air in science class, asked all the right questions, from what causes holes in the ozone layer to, please explain the greenhouse effect. They were also concerned about PCBs, acid rain, air pollution and CFCs. Only the space program turned their curiosity a bit wacky. Several youngsters asked us point blank if there was life on Mars. Others were merely content to learn whether the red planet has oxygen. One 10-year-old put the whole problem neatly in a postscript: "I forgot, I heard something about oxygen and life on Mars. Is that true? Circle **yes, maybe, no**. Please give me more information on all this. Only if you have any."

Perhaps three or four students had an amusing way of writing or spelling. Two letters are quoted by way of example: "Dear Sir/Madam, Why is gasses affecting the ozone layer so much? I've heard that people are dieing from holes in it and it was very hot in the summertime . . ." "I would like to know if I could have some information about the Air pollution. Air pollution is making are world not a better place to live. Dump yard is the bad place. What would be a good idea to do? Hope you can answer."



ADMA Elizabeth Dowdeswell signs Memorandum of Understanding with the Representative of China.

STAFF CHANGES / CHANGEMENT DE PERSONNEL

Appointments/Promotions Nominations/Avancements

S. Roy (MT-6) Meteorologist/Météorologiste, Saint-Laurent, Que./Qc
T. White (AS-4) Admin. Officer/Agent d'administration, APEC, Downsview, Ont.
D. Nemeth (CR-4) Clerk/Commis, OAEA, Toronto, Ont.
J. LaPierre (EG-6) Pres. Tech./Techn. en prés., Mirabel, Que./Qc
A. Leduc (MT-6) Meteorologist/Météorologiste, CMC, Dorval, Que./Qc
Z. Musson (CR-4) Clerk/Commis, AHRS, Downsview, Ont.
D. Doreen (CR-4) Clerk/Commis, AHRO, Downsview, Ont.
R. Tesoro (CR-4) Clerk/Commis, AHRS, Downsview, Ont.
E. Robilliard (EG-7) Supervisor/Superviseur, Vancouver, B.C./C.-B.
M. Riley (EG-6) Weather Service Specialist/Spéc. service mét., Victoria, B.C./C.-B.
A. Henry (MT-5) Instructor/Instructeur, ACTP/T, Downsview, Ont.
N. Mehta (OCE-2) Word Processor Operator/Opér. trait. de textes, AWPA, Downsview, Ont.
M. Pellerin (FI-2) Financial Officer/Agent financier, OAEA, St-Laurent, Que./Qc
A. Gouthro (ST-SCY-2) Secretary/Secrétaire, WC1, Edmonton, Alta./Alb.
D. Robinson (EG-1) Met. Tech./Techn. en mét., WS3/SM3, Fort Reliance, N.W.T./T.N.-O.
D. Whittle (EG-1) Met. Tech./Techn. en mét., WS3/SM3, Fort McMurray, Alta./Alb.
T. Smith (EG-1) Met. Tech./Techn. en mét., WS3/SM3, Cape Parry, N.W.T./T.N.-O.
W. Hunter (EG-1) Met. Tech./Techn. en mét., WS3/SM3, Cape Parry, N.W.T./T.N.-O.
A. Denis (EG-5) Wea. Pres./Observer/Prés./observ. mét., W03/BM3, Yellowknife, N.W.T./T.N.-O.
S. McCormick (EG-5) Wea. Pres./Observer/Prés./observ. mét., WC1, Edmonton, Alta./Alb.
Y. Lau (PC-2) Processing Spec./Spéc. du traitement, WAED, Edmonton, Alta./Alb.
R. Juszkiwicz, (CS-1) Programmer/Programmeur, WAED, Edmonton, Alta./Alb.
T. Carlson (CS-2) System Analyst/Analyste fonctionnel, WAED, Edmonton, Alta./Alb.
L. Fehr (EG-5) Wea. Observer Tech./Techn. obs. mét., WAED, Edmonton, Alta./Alb.

D. McGillivry (MT-2) Met. Dev. Level/Niv. perf. mét., ARWC, Edmonton, Alta./Alb.
B. LaRochelle (MT-2) Met. Dev. Level/Niv. perf. mét., ALWC, Edmonton, Alta./Alb.
B. Phenix (EG-6) Regional Met. Inspector/Inspecteur rég. de mét., Vancouver, B.C./C.-B.
T. Darde (CM-6) Communicator/Communicateur, QAEM-CMQ, St-Laurent, Que./Qc
J. L. Tremblay (CM-6) Communicator/Communicateur, QAEM-CMQ, St-Laurent, Que./Qc
V. Turcotte (MT-6) Meteorologist/Météorologiste, QAEM-CMQ, St-Laurent, Que./Qc
G. Daudelin (MT-6) Meteorologist/Météorologiste, QAEM-CMQ, St-Laurent, Que./Qc
P. Courbin (MT-6) Meteorologist/Météorologiste, QAEM-CMQ, St-Laurent, Que./Qc
A. Cantin (MT-6) Meteorologist/Météorologiste, QAEM-CMQ, St-Laurent, Que./Qc
A. Rahill (MT-5) Meteorologist/Météorologiste, QAEM-CMQ, St-Laurent, Que./Qc
J. Charbonneau (EL-4) Electronic Tech./Électrotechnicien, QAEO, St-Laurent, Que./Qc
J. Tremblay (PC-2) Regional Chemistry Spec./Spécialiste rég. en chimie atmosphérique, QAES, St-Laurent, Que./Qc
G. Wright (MT-2) Met. Dev. Level/Niv. perf. mét., MAEM, MWC, Bedford, N.S./N.-É.
J. Murtha (MT-2) Met. Dev. Level/Niv. perf. mét., MAEM, MWC, Bedford, N.S./N.-É.
T. Wait (MT-2) Met. Dev. Level/Niv. perf. mét., MAEM, MWC, Bedford, N.S./N.-É.
N. Bois (MT-2) Met. Dev. Level/Niv. perf. mét., MAEM, MWC, Bedford, N.S./N.-É.
D. Villeneuve (MT-2) Met. Dev. Level/Niv. perf. mét., MAEM, MWC, Bedford, N.S./N.-É.
F. Petrucci (MT-2) Met. Dev. Level/Niv. perf. mét., MAEM, MWC, Bedford, N.S./N.-É.
K. Mason (CR-4) Clerk/Commis, OAE00, Toronto, Ont.

Transfers/Mutations

P. Aber (EX-3) Director General/Directeur général, ACDG, Downsview, Ont.
P. Kerr (EL-4) Electronics Tech./Électrotechnicien, OAE0 Pearson Int'l. Airport, Ont.
S. Armour (PE-3) Personnel Generalist/Généraliste en personnel, AHRO, Downsview, Ont.
W. Piercey (PE-3) Personnel Generalist/Généraliste en personnel, AHRC, Downsview, Ont.
B. Emig (EG-2) Met. Tech./Techn. en mét., Vancouver, B.C./C.-B.
L. Stedel (EG-2) Weather Observer/Observateur météorologique, Vancouver, B.C./C.-B.
F. Aronson (EG-6) Pres. Tech./Techn. en prés., Mirabel, Que./Qc
A. Charpentier (EG-6) Pres. Tech./Techn. en prés., W04/BM4, Iqaluit, N.W.T./T.N.-O.
G. Roy (MT-3) Meteorologist/Météorologiste, QAEM-CMQ, St-Laurent, Que./Qc
M. Roch (MT-6) Meteorologist/Météorologiste, RPN, Dorval, Que./Qc
B. Trefan (MT-3) Meteorologist/Météorologiste, WC1, Edmonton, Alta./Alb.
A. Giles (MT-2) Met. Dev. Level/Niv. perf. mét., WC1, Edmonton, Alta./Alb.
B. Lemon (EG-5) Operation Support/Soutien à l'exploitation, WAED, Edmonton, Alta./Alb.
T. Sommerfeld (CR-3) Clerk/Commis, WAED, Edmonton, Alta./Alb.
D. McLeod (CR-4) Clerk/Commis, ACDG, Downsview, Ont.
P. Wong (MT-3) Meteorologist/Météorologiste, PWC, Vancouver, B.C./C.-B.
R. Lines (EG-6) Weather Service Specialist/Spéc. service mét., Lower Mainland W0, Vancouver, B.C./C.-B.
L. Mainwaring (EG-2) Met. Tech./Techn. en mét., WS3/SM3, Cape St. James, B.C./C.-B.
D. Reimer (EG-4) OIC/Responsable, W04/BM4, Vancouver Int'l. Airport, Vancouver, B.C./C.-B.
S. Payment (EG-4) Upper Air Tech./Techn. en aé., Vancouver, B.C./C.-B.
A. Webster (EG-6) Regional Met. Inspector/Inspecteur rég. de mét., Vancouver, B.C./C.-B.
R. Lecotey (EG-4) Upper Air Tech./Techn. en aé., W04/BM4, Port Hardy, B.C./C.-B.

J. Marcoux (MT-2) Met. Dev. Level/Niv. perf. mét., QAEM-CMQ, St-Laurent, Que./Qc
E. Buhler (MT-2) Met. Dev. Level/Niv. perf. mét., QAEM-CMQ, St-Laurent, Que./Qc
J. Brassard (MT-2) Met. Dev. Level/Niv. perf. mét., QAEM-CMQ, St-Laurent, Que./Qc
L. Buissière (MT-2) Met. Dev. Level/Niv. perf. mét., QAEM-CMQ, St-Laurent, Que./Qc
G. Ratté (MT-2) Met. Dev. Level/Niv. perf. mét., QAEM-CMQ, St-Laurent, Que./Qc
N. Draper (EG-4) OIC/Responsable, WS3/SM3, Lytton, B.C./C.-B.

**Temporary or Acting Positions/
Postes temporaires ou intérimaires**

R. Grimes (SM) A/Chief/Chef int., APEC, Downsview, Ont.
P. McCallum (EG-7) OIC/Responsable, W04/BM4, Windsor, Ont.
A. McIntyre (EG-5) Met. Tech./ Techn. en mét., W04/BM4, London, Ont.
F. Blanc (EG-6) Pres. Tech./Techn. en prés., W04/BM4, Sudbury, Ont.
M. Stevens (EG-6) Weather Service Specialist/Spéc. service mét., Vancouver, B.C./C.-B.
R. Lacate (EG-1) Met. Tech./Techn. en mét., WS3/SM3, Cape St. James, B.C./C.-B.
V. Williams (EG-5) OIC/Responsable, WS3/SM3, Cape St. James, B.C./C.-B.
S. Magee (PE-3) Personnel Generalist/Généraliste en personnel, A/Chief/ Chef int., Vancouver, B.C./C.-B.

R. Massaroni (AS-7) Environmental Agenda Coordinator/Coord. progr. environnemental, ACDG, Downsview, Ont.
A. Oman (CR-3) Clerk/Commis, PWC, Vancouver, B.C./C.-B.
J. Derham Reid (EG-5) OIC/Responsable, WS3/SM3, Cape St. James, B.C./C.-B.
M. Boies (OCE-3) Word Processor Operator/ Opér. trait. de textes, CMC, Dorval, Que./Qc
A. Roy (EG-6) Pres. Tech./Techn. en prés., W04/BM4, St-Hubert, Que./Qc
R. Fordyce (EG-7) Port Meteorological Officer/ Agent météor. portuaire, Toronto, Ont.
C. B. Adamson (SM) A/Regional Director General/Directeur général régional p.i., OAED, Toronto, Ont.
B. Greer (A/SM) A/Chief, Forecast Operations/Chef int. des opérations de prévision, OWC/CMO, Toronto, Ont.
A. Keating (A/MT-7), A/Chief Meteorologist/Météorologiste en chef p.i., OWC/CMO, Toronto, Ont.

Departures/Départs

J. Dion, PWC, Vancouver, B.C./C.-B., to/à CFB/BFC, Trenton, Ont.
N. McDuffe, Human Resources/Ressources humaines, Vancouver, B.C./C.-B., to/à Ministry of Housing & Social Services, Victoria, B.C./C.-B.
B. Wallworth, MWC, Bedford, N.S./N.-É.
P. Beauchemin, CMCAF, Dorval, Que./Qc

A. Robinson, SSD, Toronto, Ont. to/à MOT/MDT, Pearson Int'l. Airport/Aéroport int. Pearson, Ont.
A. Giles, OAEM, Toronto, Ont.
S. Hardaker, OAE00, Toronto, Ont. to/à DND/MDN
P. Smith, OAED, to/à Alberta Forestry/Forêts Alberta
J. Bryson, OAEW, Toronto, Ont.

Retirements/Retraites

R. O'Shea, AAM, Downsview, Ont., April/avril, 1990.

Deaths/Décès

D. Jackson, OAE00, Toronto, Ont., April/avril, 1990.