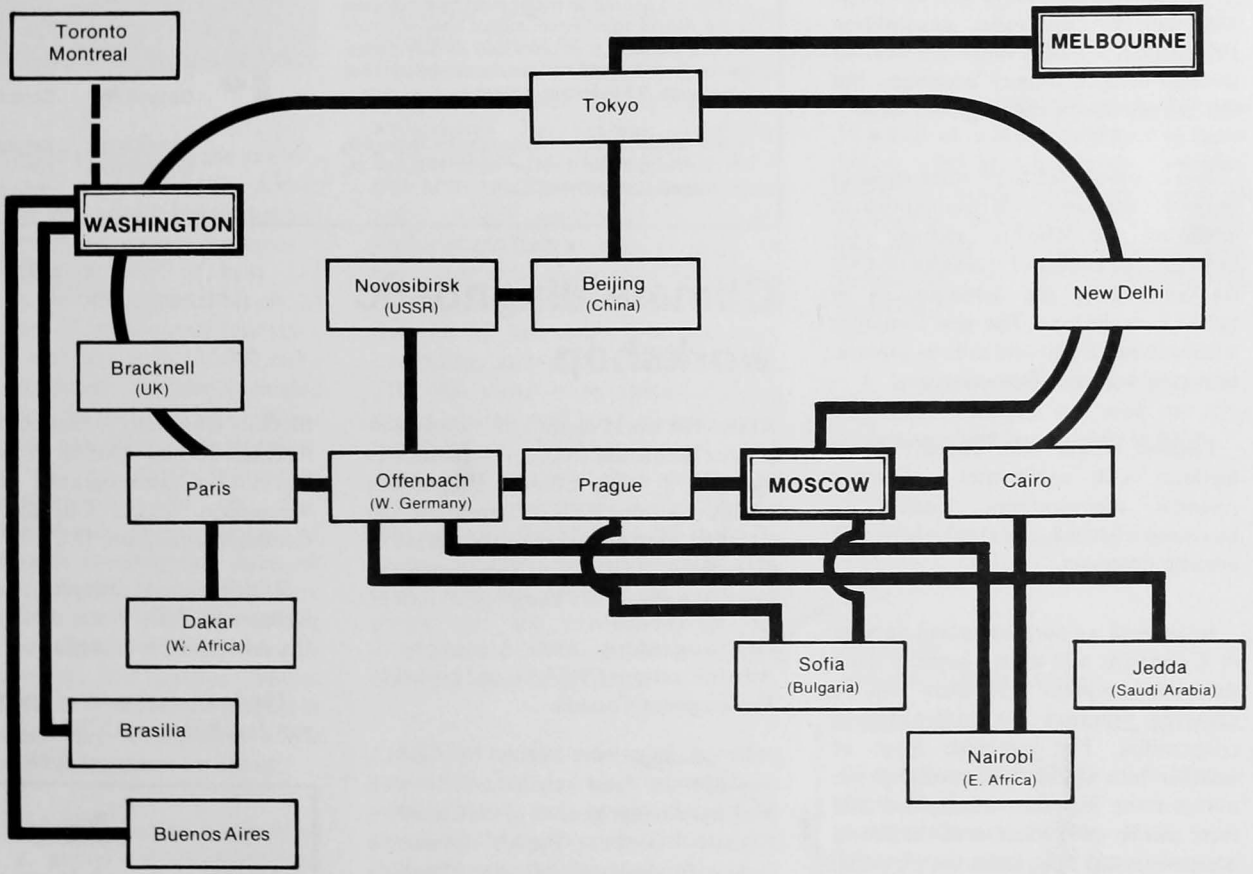
November/December 1983

ZEPHYR

WMO TELECOMMUNICATIONS



Environment Canada Environnement Canada

Canada

NEWS

Supercomputer arrives at CMC

The new, ultrafast computer has recently been installed at the Canadian Meteorological Centre (CMC) in Montréal. The new machine called Cray IS/1300, is a vector computer with 10 million bytes of memory and able to calculate at a rate of more than 50 million operations per second. It is in fact the fastest computer in the world and has a computing power equivalent to a million personal computers.

The "supercomputer" which replaces the CYBER 76 at the CMC will cost around $32 million spread over 6½ years.

The main interest of the new computer will be its multi-use capabilities. Primarily, it will offer improved weather services in both official languages, but this is only one of the proposed uses.

It is also designed to produce seasonal outlooks and improved evaluations of scenarios for climate change; for example, the effects of atmospheric CO_2 on climate, or the consequences of volcanic explosions. The new computer will do research into acid rain, its sources, transport and transformation.

Finally, it will offer shared use of facilities with universities and other research organizations, leading to increased knowledge of atmospheric and oceanic processes.

In general, an ever increasing number of Canadians will derive benefits from the supercomputer and there will be growing reliance on international cooperation. For example, input of weather data will cover the entire globe, not just the northern hemisphere and there will be more reliance on the World Meteorological Organization's global observation network.

The Cray supercomputer is the 56th of its type in the world and first in Canada.

From Climatic Perspectives

Zephyr Highlights

Cover: A major function of the World Meteorological Organization is to coordinate the Global Telecommunications System, a key factor in the exchange of weather information between the three World Centres: Washington, Moscow and Melbourne and dozens of regional and national centres around the world. The chart shows the Main Trunk Circuit in simplified form.

Zephyr is a periodical publication for employees of the Atmospheric Environment Service, Environment Canada. It is produced for the Atmospheric Environment Service by the Information Directorate of Environment Canada.

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Environment Canada / Environnement Canada

Atmospheric Environment Service / Service de l'environnement atmosphérique

Climate diagnostic workshop

About 100 world experts on climate and climate prediction from several countries attended a 5-day Climate Diagnostics Workshop at AES Downsview in October. The first workshop of its kind to be held in Canada, it was sponsored by the United States National Oceanographic and Atmospheric Administrations (NOAA), and hosted by Environment Canada.

Proceedings were opened by ADMA Jim Bruce, and chairman Gordon McKay, director general of the Canadian Climate Centre. Papers presented included a review of the Canadian Climate Fall '82 to Summer '83; the El Niño Fall and Winter 1982-83; and Climate and Circulation Spring and Summer 1983, from a U.S. perspective.

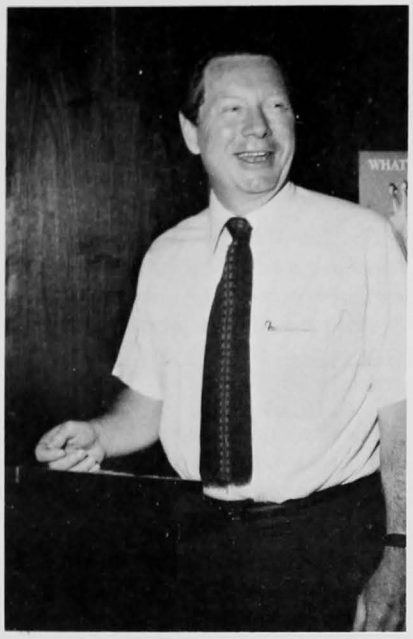
Experts from Canada included George Boer and Phil Merilees of the Canadian Climate Centre and Jacques Derome, McGill University. American experts included Jerome Namias of the Scripps Institute of Oceanography and James Rasmussen, chief, Climate Analysis Centre, Washington, D.C.

British experts included P. Michael Kelly, and P.D. Jones both from the University of East Anglia.

The local chairman of the workshop was Jacob Padro (CCRM).

In the next issue: complete report on the inauguration of the CRAY 1S 1300.

ADMA's message for 1984



It is time again to reflect on the achievements of AES in the past year, and to consider the year ahead. Public demand for the services we provide continues to increase. The number of calls and briefings by our offices soared beyond 14 million, from 10 million only four years ago. Staff members gave 175,000 radio and TV broadcasts. We have expanded our weather forecast regions. Major contributions have been made to understanding of the most important environmental issues of the day, especially acid rain, and the impact of carbon dioxide concentration increases on climate. Significant studies were completed on the level of weather services we should provide, on the forecast system, and on our human resources. These three studies will lead in 1984 to a new long-range plan — a new course for AES for the years ahead.

Such a plan is needed to help us through a period of unprecedented demands for services, and without an increase in the most important resource, our people. How can this be achieved? The only possible way is to make maximum use of new advanced technologies to help us observe the elements, analyze the data, produce forecasts, and to better disseminate our important products to the various publics. Fortunately, funding for such technology is being provided. We are just now installing the most powerful computer in the country at CMC Montreal; we have embarked on a program of major additions to our aerial ice reconnaissance fleet and instrumentation; we are moving ahead with a new communications system; and continuing to pursue, with Canadian industry, means of automatically observing the weather. In addition, automation in our support functions is increasing the effectiveness of our secretaries, administrators and clerks.

The human dimensions of these developments are, of course, much more important than the hardware and software. These new technologies will free some of our staff from routine tasks, to take on more interesting, varied assignments. For example, producing good day-one forecasts and interpretation of them effectively for the public are tasks which continue to require sophisticated human skills. In short, we can, through our new plan, make these technological advances a means to ensure that all of our daily jobs are more interesting, and yes, more challenging. This will mean some special training programs for staff and up-grading of qualifications. We intend to do this in ways that respect the wishes and aspirations of our people and at the same time, provide the Service with the skills needed to meet the future needs. The safety, and well-being of the Canadian people and the productivity of our industries depend in significant measure on our success in this work.

AES has a long tradition of absorbing new technology, using it to serve our publics better, but, at the same time, enhancing the career opportunities of our staff. We will continue to do this.

Looking at global trends there are increasing threats to the integrity of the atmosphere and its continued ability to sustain life on planet Earth. Many lakes in North America and Europe have had aquatic life destroyed by acid rain; the maintenance of the health-protecting stratospheric ozone layer remains a legitimate concern of the world community; major climatic changes will probably be brought about by the modification of the chemical composition of the global atmosphere by burning of fossil fuels and other activities which release chemical wastes to the air. There is growing realization that the ultimate horror of a nuclear war would be the irretrievable contamination of the highly mobile global atmosphere, possibly bringing about the elimination of most life on Earth. Mis-use of technology is turning the local pollution problems of the 1970s into global environmental threats. These urgent matters cry out for scientific leadership by AES, both in Canada and in the world community.

So 1984 for AES will be another year in which we will be challenged as never before. 1984 need not be the Orwellian world of mis-directed application of technology, but a year for increasingly enlightened use of science and technology for the betterment of mankind.

I look forward to meeting these challenges with you and wish you all a stimulating and happy year in 1984.

Jim Bruce
Assistant Deputy Minister

An extra tropical phase of Hurricane Hazel moved northward over central southern Ontario, October 15-16, 1954. Widespread wind and flood damages occurred with the greatest destruction of life and property taking place in the river valley west and north of Toronto. Brampton, Ont. had a total of 178 mm of rain in one day. Total casualties amounted to more than 80 and property damages exceeded $24,000,000.

Minister's day includes ice contract, daycare

Environment minister Charles Caccia poses in front of a DASH 7R in the Dehavilland hangar, Downsview Airbase while being interviewed by a Radio Canada reporter.

During October, Charles Caccia, the relatively new Minister of the Environment spent a day in the Downsview area on AES business.

His first task was travel to de Havilland Canada Limited, situated at the Department of National Defence airbase to sign a $26 million contract for the purchase of a DASH 7 Ranger Extended Range Aircraft.

Mr. Caccia was met by the president of de Havilland, John Sandford and was taken to a hangar where the signing ceremony took place. A large audience of de Havilland employees, AES ice branch staff and media attended. ADMA Jim Bruce and ACDG Jim McCulloch also attended.

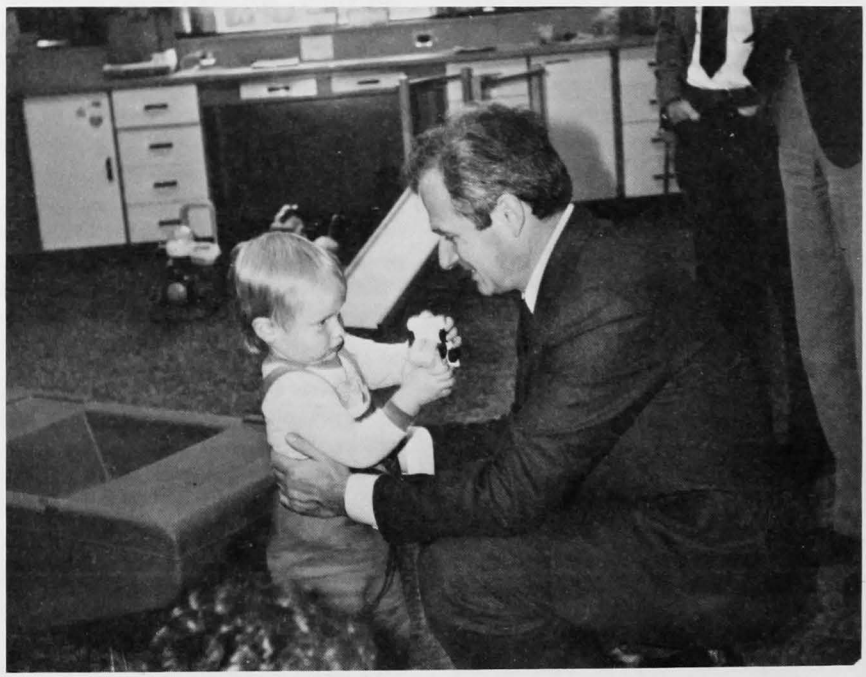
The new aircraft will be fully equipped for ice reconnaissance work and is expected to be delivered to AES by mid-1985. It will join the two Lockheed Electras currently leased by AES Ice Branch. An innovation will be the DASH 7R's ability to survey and forecast icebergs.

During the ceremony, Mr. Caccia told the audience that in addition to the $26 million contract for the DASH 7R, a further $6 million would go to Canadian high technology firms for supply of advanced equipment to be put aboard the aircraft. All contracts were part of the federal government's $2.4 billion Special Recovery Program and should offer several hundred person years of new employment in Canadian industry over the next few years.

The minister then travelled to AES headquarters building in Downsview. His main purpose there was to attend a detailed briefing on all AES activities presented by ADMA and the directors general.

His first stop in the building, however, was a tour of the Daycare Centre where he was greeted by a welcome sign drawn by several of the children. He seemed to particularly enjoy this part of his visit.

The minister's briefing on AES programs lasted about 1½ hours and he left this advice for AES staff, particularly those who deal with outside departments: to stress wherever possible the economic benefits of AES services, since "during these difficult economic times, it is particularly important to remind users and central agencies alike of the favorable benefit/cost ratio of investments in meteorology."



Mr. Caccia spends a more relaxing moment with two-year-old Jonathan Etkin while visiting the daycare centre at AES, Downsview.

AES welcomes "Smokeaholics anonymous"

Kicking the habit!

A unique bond links a dozen men and women in the big AES Downsview building. They know that if a special sort of life-and-death problem strikes they can consult and confer as members of The Group. They are all recent graduates of a new (for Government) kind of therapy course: Smoking and How to Kick the Habit.

The six once-a-week sessions, organized by the Toronto-York Lung Association, were held after work in late summer and early fall. Among other things participants were told how to keep records of every cigarette consumed, how to detect unconscious reasons for their smoking, how to handle withdrawal symptoms once they had quit and how to check diet problems like gaining weight.

Above all the course depended on group exchanges and discussions on personal smoking problems. Explains course instructor, Mary Lou Carter, "My students soon learn they are not alone, that they can benefit from other people's struggles and experiences."

The participants from a variety of AES occupations, had varied smoking histories. Answering a questionnaire, they said they had been regular smokers for periods of between three and 40 years, and that prior to the course they had smoked from 10 to 50 cigarettes a day. Main reasons given for wanting to quit were health and money.

The proudest moment came when participants received their non-smokers' certificates at the end of the course. Just to prove that their lungs were much healthier than before, the students did bio-feedback retesting by blowing into small balloons.

Mrs. Carter, a one-time smoker, now working as a home economist, said she is very pleased with the AES course and found the attitude of her students very positive. She is certain a large number of the participants have quit smoking for good.

Because of the in-group, mutual help nature of the course, most students preferred to remain anonymous. Some did not wish to admit that they were at grips with a bad habit, even though it had now been licked.

However, participant Tony Smith of the Research Directorate's air quality division said he took the course because he had been smoking for almost 40 years and now wanted to stop permanently. He had once stopped involuntarily while stationed for a couple of years as a meteorological technician at the former high arctic weather station of Sachs Harbour.

"Cigarette delivery by Canadian ships and planes was so limited, there was an enforced smoking ban for several months," says Smith who thinks it is much better therapy when the smoking ban is self imposed. He is confident the excellent Lung Association course will cure his 25 cigarettes-a-day, roll-your own habit once and for all.

Kathy Currie of Field Services Directorate told Zephyr "I only smoked for three years this time. Now, thanks to the course, I have enough inner resources to kick the habit for good. It makes a difference to know there are other people in the building who have been through the same experience."

Added one anonymous student, "Omit the names. In this sort of project, it's the group that counts. We are all so happy we have made a miraculous recovery."

John Keefe, occupational safety supervisor at AES Downsview, agrees that the Lung Association course was a success and confirms that a second non-smoking course launched at Downsview in November will terminate at year's end. He believes both courses will be the forerunners of many more to come.

The small hut in the instrument compound in the grounds of AES Downsview headquarters appears to be in flames, but it's only a practice. John Keefe, AES safety officer (centre) demonstrates how to put out a small gasoline fire as two AES employees look on. Later everyone had a chance to join in. The hands-on exercise, performed by 30-40 staff, was the second part of a special in-house familiarization seminar on the different kinds of hand fire extinguishers.

The first part was a detailed demonstration in the AES Downsview Auditorium and construction of these various pieces of equipment and advice on what type of extinguisher to use on different burning materials.

The program was conducted by Mr. Keefe and Inspectors from the regional office of the Dominion Fire Commission of Public Works, Canada.

First French MOC trainees graduate.

Michel Jean, a graduate of the first Cours opérationnel en météorologie (COM) is seen here receiving the James Percy Prize from Mireille Leblanc, then acting chief of Professional Training and Development Division. He won the award for outstanding work in synoptic meteorology.

The first Cours Opérationnel en Météorologie (COM) given by the French Professional Training Section was held in the Quebec regional offices in St-Laurent from January 4 to June 30, 1983. This course is the equivalent of the MOC given by the English Professional Training Section in Downsview.

The COM is part of a new method of recruitment which requires that the student hold a degree in meteorology before applying for a position with AES. The COM also follows up the training offered to Francophone meteorologists by the University of Quebec at Montreal (UQAM) in cooperation with the Professional Training and Development Division. The training at UQAM began in January 1973 and ended in the spring of 1982. Ten courses were offered during this time.

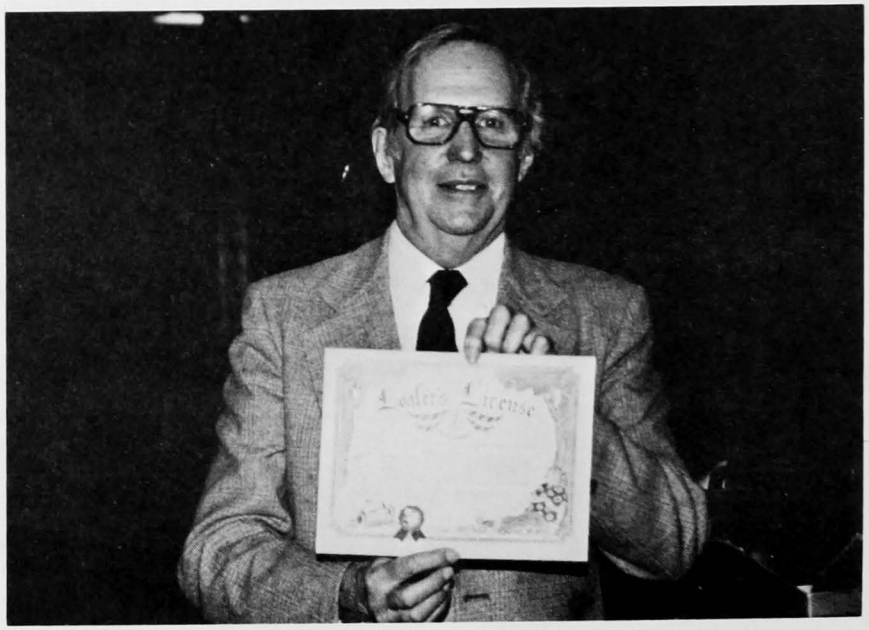
COM 1 was an enriching experience. We offer our warmest congratulations to the twenty graduates of the program. They met the requirements of the course and displayed a keen interest in their new career. The teaching staff were kept extremely busy and should be commended.

During the graduation ceremonies, we had the pleasure of a visit from Mr. G.M. Shimizu, Director General, Policy, Planning and Assessment Directorate, AES, and Mrs. M. Leblanc, Acting Chief, Professional Training and Development Division, who took advantage of the opportunity to encourage trainees in their careers as meteorologists-forecasters.

The James Percy prize, awarded to an outstanding COM trainee, was won by Mr. Michel Jean, for his work in synoptic meteorology.

A dinner was held following the graduation ceremonies, and hearty congratulations were extended to all.

Bob Easto, financial officer, Administration division is seen here at his retirement party which took place recently at AES Downsview. Mr. Easto was a finance officer with the weather service for about 23 years and also served for a while with personnel services. He made contact with a wide variety of AES staff at all levels and evidence of this was seen at the reception attended by dozens of current and retired employees, including ADMA Jim Bruce, former ADMA Reg Noble, former AES finance head Ken Hignell and former director general Larry Campbell. As a parting gift Mr. Easto received a radio-tape deck. His hobbies are music and painting.



WMO promotes world weather cooperation

Every morning, at 7 a.m. EST, weather observers at thousands of stations around the globe read meteorological instruments, code the data and transmit them on dedicated weather communication circuits.

All observers use standard, international definitions and a common code when transmitting to local, national and foreign weather offices. There is total disregard for national boundaries by the atmosphere.

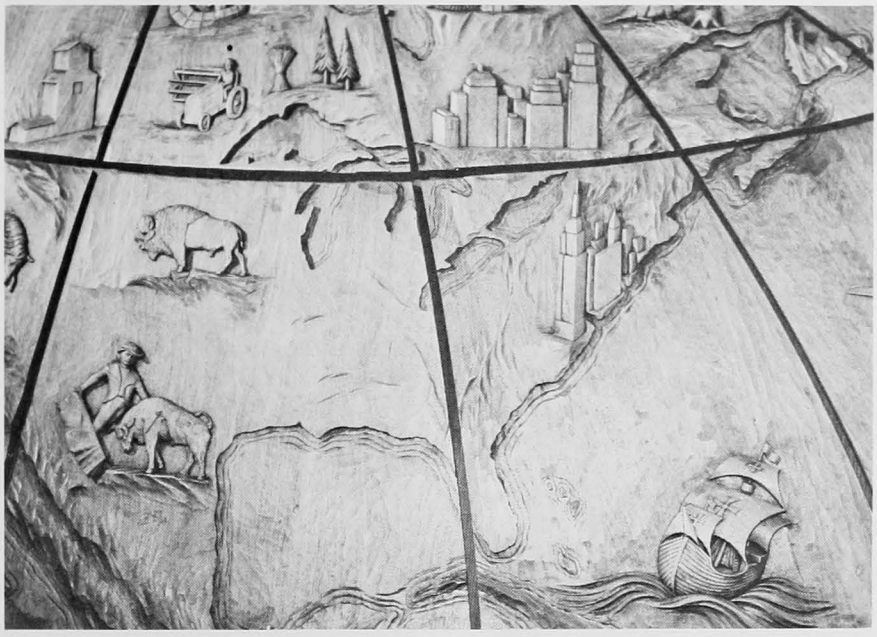
With the increasing need for weather and climate information in most countries meteorology has become one of the world's most international subjects. Every country, big and small, has a national meteorological service and for each to provide a worthwhile service to its government and the public, the international exchange of data is vital.

Each country could negotiate bilateral agreements with others to exchange information. But meteorological pioneers a century ago realized the need for international cooperation and developed an organization now known as the World Meteorological Organization (WMO).

Any country in the United Nations that has a national meteorological service may become a member of WMO, a self-governing agency which ranks with the United Nations Economic, Scientific and Cultural Organization (UNESCO) and the World Health Organization (WHO).

It exists to facilitate and promote international meteorology and is concerned with:

a) weather observations and networks of stations
b) the rapid exchange of data between countries
c) national weather and climate services
d) cooperation in meteorological research, and
e) education and training, especially in developing countries.



This hand-carved wall panel, depicting North America in allegorical design was Canada's gift to the WMO when the world weather body moved into its present quarters in Geneva, Switzerland in the 1950s. The mural still decorates one of the Secretariat offices.

There are 157 member nations in the World Meteorological Organization. Each country designates the head of the national meteorological or hydro-meteorological service as its permanent representative. These representatives meet every four years at a Congress, the supreme body of the organization where programs and budgets are established. At the Ninth World Meteorological Congress, in Geneva in May 1983, some 138 WMO countries were represented. Between congresses, an executive council is responsible for coordination of the program and use of the budget.

A permanent Secretariat in Geneva has 246 scientists, administrators, interpretors and clerical assistants. In keeping with global economic conditions, there has been no growth in WMO activities in recent years. The annual budget is just under $20 million.

Canada's annual contribution is about $450 000. Canada is represented by Jim Bruce, assistant deputy minister, AES, elected in May 1983 to serve as a vice-president for four years.

Canada is a member of the North and Central America regional association. It is represented on all eight technical commissions and in recent years has provided presidents for five commissions. Technical experts in three basic commissions study, plan and make recommendations on global cooperation and improvement for:

- weather observing
- data processing
- data exchange
- international standardization of instruments and observations, and
- coordination of research.

The other commissions deal with practical aspects of aeronautical meteorology, agricultural meteorology, marine services, hydrology and climatology. Each technical commission has several working groups and rapporteurs involved in specific aspects of WMO's work.

Organization has a history

Modern meteorology, as a science and an operational service, was made possible by the invention of scientific measuring instruments in the 17th century. Then, with atmospheric data available, physicists began to enunciate basic physical laws — the first step in understanding the dynamics of the atmosphere.

By the 1850's, meteorologists began to use the newly-invented electric telegraph to exchange the weather observations necessary to make weather forecasting — especially marine storm warnings — possible. Mariners had long wanted to know more about winds and storms over the oceans. To exchange such information, the first international meteorological conference was held in Brussels in 1853.

Over the next 20 years, with the founding of several national meteorological services, the need for international collaboration became apparent. Beginning in 1873 at Vienna, the framework for an international organization was established.

The first direct Canadian participation was by the then director of the Canadian meteorological service, R.F. (later Sir Frederic) Stupart who participated in the Paris 1896 Conference of Directors.

Mr. Stupart, whose travel expenses were $250, made the most of his trip by installing a new observing station in Newfoundland on the way east and inspected stations for two weeks in the maritime provinces on the way home.

Meteorology received a tremendous boost after World War I through an imaginative revision of scientific principles by the Norwegian school of meteorologists, but international meteorology did not markedly move forward until World War II. During the war and thereafter the value of meteorology, to aviation and in the planning and execution of operations on land and at sea, was amply demonstrated.

Before 1939 the International Meteorological Organization had been largely an informal conference of directors unable to commit their services to programs and projects, especially where large budgets might be involved.

During World War II, technology used in meteorological observing and communications developed at an unprecedented rate. To take advantage of this and to ensure the organization could become truly global, it was decided to convert the IMO into an intergovernmental body, the World Meteorological Organization. The chief meteorologist in each country would be the national representative.

Organizational meetings took place in London and Paris in 1946 and in Toronto and Washington in 1947. Later that year the Convention was signed by 31 countries and WMO came into being on March 23, 1950. An Agreement with the United Nations negotiated in 1951 at the WMO First Congress in Paris came into force that year.

WMO even more relevant in the 1980s

WMO, an official international organization, has remained a relatively small, inexpensive organization. The permanent Secretariat coordinates plans and programs with the member countries responsible for actual scientific research, development and operatinoal programs.

Each country is responsible for transmitting meteorological data each day through the WMO telecommunication systems. Regional meteorological centres, such as at Montreal-Toronto, and the world centres at Washington, Moscow and Melbourne have responsibility to ensure that each meteorological service in the world obtains the data it is entitled to by international agreement. Meetings of the organization are held either in Geneva or in member countries where costs are largely met by the host.

Current programs of the WMO are the World Weather Watch, the World Climate Program, the Research and Development Program, the Hydrology and Water Resources Program and the Education and Training Program.

1) WORLD WEATHER WATCH (WWW)
Launched two decades ago, it is a coordinated global system that makes standard observed data, forecasts and other processed information available to countries for operational, applied and research purposes. The exchange of information had started in a limited way 100 years before. The system ensures that new, improved observing methods, such as with satellites and computers, are used to provide uniformly observed data. It ensures that telecommunication facilities are operating and that data processing, storage and retrieval is carried out by member countries in the best possible manner.

2) WORLD CLIMATE PROGRAM (WCP)
Established in 1979 in response to widespread concern by governments and the public over possible changing climates and the need to use climate resources in the many socio-economic sectors. Objectives are to help member countries apply available data and knowledge and improve present knowledge of the effect of climatic variations on society. Much research is required to allow forecasts of climate change resulting from natural causes or the activities of mankind.

3) RESEARCH AND DEVELOPMENT PROGRAM (R&D)
Coordinates research programs by individual countries, assists in

planning and execution of international projects and facilitates exchange of information on progress. The Global Atmospheric Research and the World Climate Research programs cooperate and coordinate with the International Council of Scientific Unions, a non-government organization, which includes the International Association of Meteorology and Atmospheric Physics in which Canada participates.

4) HYDROLOGY AND WATER RESOURCES PROGRAM
Primarily it promotes cooperation amongst members in operational hydrology, especially in development of water resources and mitigation of the effects of floods and droughts. It cooperates with UNESCO, concerned with international hydrometeorological research.

5) EDUCATION AND TRAINING PROGRAM
Ensures the full benefit of meteorological and hydrological skills and knowledge can be obtained by all. Aid is given to the least developed countries through training of meteorologists, hydrologists and meteorological observers. The WMO has technical cooperation to ensure procurement and placement of equipment and instruments in developing countries using resources contributed by WMO member countries under a voluntary cooperation program and by other international funding bodies such as the United Nations Development Program.

Benefits to Canada

The most obvious benefit to Canada is the availability, all day, every day, of meteorological data in a common, standard format from all areas of the globe in which we are interested. The definition of terms, the times of observation and data transmission, the digital codes and units of measurement used have all been agreed to within WMO. Consequently the data, analyses and forecasts are understandable and useable to all regardless of language. Hemispheric and global data are much required for use with complex mathematical models and high speed computers for better weather forecasts.

Through international research and development we have immediate access to knowledge and techniques we could never attempt to obtain independently because of the cost.

Finally, Canada's participation in WMO is an effective contribution of technological aid to developing countries and toward a better understanding among nations of the world.

WMO Organization

1. **World Meteorological Congress**
   - meets every four years (1983, 1987, etc.)
   - all member countries invited
   - Canada always represented by four to eight scientists and diplomats.

2. **Executive council**
   - meets every year
   - consists of president, three vice-presidents, six regional association presidents and 26 elected members
   - Jim Bruce is currently a vice-president.

3. **Six regional associations**
   - each meet every four years
   - Canada belongs to the North and Central America region
   - working group and rapporteurs work between meetings.

4. **Eight technical commissions**
   - Aeronautical Meteorology, Agricultural Meteorology, Atmospheric Sciences, Basic Systems, Climatology, Hydrology, Instruments and Methods of Observation, Marine Services.

The United Nations crest on the building (right) marks the site of the head office of the World Meteorological Organization in Geneva, Switzerland.

In the next issue: report on the first WMO Bureau visit to Canada.

WMO praises Canada's Ozone Data Centre

As one of his last gestures before stepping down as secretary-general of the World Meteorological organization, Dr. A.C. Wiin-Nielsen has expressed appreciation to AES for operating the World Ozone Data Centre (WODC) for more than 20 years.

In a letter to ADMA Jim Bruce, Dr. Wiin-Nielsen emphasizes that without WODC many scientists would be unable to complete their studies. In particular he mentioned the implementation of the WMO Ozone Project over the last six years after scientists reported the possibility that freons, released from aerosol spray cans and automobile air-conditioners, might deplete the ozone layer.

Singled out for special praise by the retiring secretary-general was Larry Morrison, head of WODC who is a member of AES Research Directorate and whose office is located at AES Downsview headquarters. Mr. Morrison compiled the first catalog of ozone data in 1964 and a comprehensive list of ozone stations shortly after. He was named head of WODC in 1974.

During his term of office one of his main tasks has been to produce world ozone data in machine readable form.

For 1978-79 Mr. Morrison supplied ozone data directly to WMO in support of the UN agency's FGGE (First GARP★ Global Experiment) project.

An ongoing task has been the collection, quality control and publication of world ozone data. During the course of a year he receives many requests from governments, industry and scientific research organizations around the world for ozone data. The majority of requests come from the United States but he also receives queries from many other countries.

He confirms that interest in obtaining ozone data has sky-rocketed since the freon scare of 1976.

★GARP — Global Atmospheric Research Program.

A day in the life of:

An AES Ice Reconnaissance Officer

AES ice observers have a demanding job, sometimes tiring and monotonous, sometimes varied and exciting. In their bid to record every kind of ice condition off Canada's shores and inland waters, these Environment Canada employees spend many hours aboard coast guard ships, and helicopters. Most of their time, however, is spent on ice reconnaissance aircraft.

Ice observation in Canada's north is economically and socially important. Fortunately, the technology of ice reconnaissance keeps pace. In a year or two ice observers will be flying aboard the ultra-sophisticated DASH 7R with its ability, among other things, to monitor icebergs. The following is an account of an 11-hour flight out of Resolute Bay, N.W.T. aboard a Lockheed Electra, the workhorse of ice reconnaissance planes. It's a day in the life of an imaginary ice observer called George.

6.30 a.m. September, broad daylight, George, with four other ice observers eats a hearty breakfast at the air hotel. The weather is still a little above freezing. Although he expects to be back that night, George picks up his bag and checks out.

7.15 a.m. Ice observers and the aircraft crew meet in the weather office to discuss the weather forecast and the coordinates of the day's flight, the former issued by the Arctic Weather Centre in Edmonton, the latter by Ice Central in Ottawa. They also fix the various altitudes to be flown depending on weather conditions and physical terrain. Finally, they select an alternate landing strip in case of emergency.

8.00 a.m. The Electra is serviced, re-fuelled, and ready for take-off. George climbs into the cramped plexi-bubble on top of the plane's fuselage, the only visual observing position. There are five different observing stations in an Electra. To combat flight fatigue, these positions are exchanged once every hour, with each observer rotating through all five positions.

8.15 a.m. The Electra takes off and still climbing, is already over ice. Although he has learned many sophisticated electronic surveillance skills, his basic training tells him exactly what to look for in the ice. He checks the size of ice floes and the total area of water surface covered by ice. He assesses the thickness and roughness of the ice and identifies "puddling" — melting of the ice by the warmth of the sun's rays. George's duties are interrupted by a startling sight — a long, nasty, red thread in the white expanse below. He sees a polar bear dragging away the carcass of a seal it has just killed. He can't help reporting this over the intercom.

9.15 a.m. First change of position. George climbs out of the plexi-glass bubble, obviously relieved to be away from the confined space. He takes up the technologically advanced Sideways Looking Airborne Radar (SLAR) position. Two outside radar antennae, one on each side of the plane scan 200 kilometres of ice and water. Inside, the radar terminal slowly rolls out two strips of film which George analyzes very intently.

10.50 a.m. Move to the remote sensing position. Data is collected on water temperature and ice topography. Three cameras in the unheated belly of the plane take photographs of the ice and water below. George's job is to monitor the radiation thermometer and the laser profilometer.

George decides it's time to eat lunch. He makes his way to the aircraft's tiny galley kitchen and finds some food in a small refrigerator, the kind that can be consumed with a minimum of preparation. There are a couple of old passenger seats in the area and George relaxes in one briefly before returning to his post.

12.00 noon. The next position involves George's favorite job — map plotting. He examines the rough maps from both the visual and radar observers as well as data from the remote sensor and very skillfully combines them all into one clear, finished map.

12.45 p.m. George is busy at the radio bands. Things are hectic. He must broadcast a regular program of weather data and ice advisories to all ships within a 2000 km radius. (This usually involves reaching 10-12 icebreakers). But he also has four ships right down below that need talking to — with blow by blow guidance through the ice. "What's that?" George queries through nerve wracking static. "What did you say? Repeat! Repeat!." It's like juggling four oranges! Some days he talks to as many as eight ships — that's when he really sweats!

1.30 p.m. The rotation continues. George is now back in the plexi-bubble. The sun, heating the plexi-glass, creates a burning greenhouse effect. Deftly he jots down his visual sightings on a blank map.

1.40 p.m. From an altitude of 1500 metres, George can see all the inlets and outlets of open water among the masses of ice. By radio, he is guiding a coast guard cutter into the outlets and away from the shoreline, getting the vessel to follow the path of least resistance.

2.30 p.m. George analyzes radar film, laid out on a lighted table top. On a blank map over the film he traces water lines and ice formations adding written information about the age and thickness of ice. He notes that a large ice floe has shrunk considerably since he last saw it, a week or so ago. He looks at his watch and mutters: "Four more hours to go."

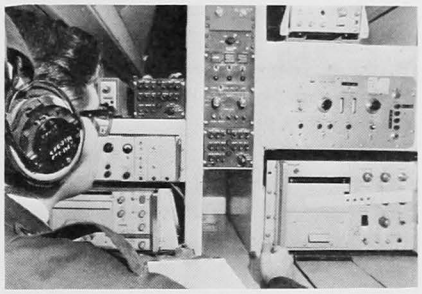
3.45 p.m. Crisis! Something wrong with the cameras. George moves quickly into the cold belly of the plane. (It's the cold that causes these foul-ups!) He removes the stalled film cassette, replaces it, and starts the cameras up again. Mission accomplished in four minutes flat! With luck the cameras didn't miss anything vital.

The Lockheed Electra (shown here) continues to be the workhorse of AES ice monitoring operations.

4.25 p.m. Another hour of map plotting passes really pleasantly. These are the maps which at the end of the day are sent to Ice Central and eventually to the archives. "Two more hours to go!"

5.20 p.m. The radio bands are quiet except for one icebreaker requesting a map. George gets the latest one from the map plotter and radios it down via facsimile equipment. He relaxes. One more regular broadcast and he'll be home free.

6.20 p.m. As the Electra comes down to land at Resolute, the plane's nose wheel shows a yellow light indicating it is unserviceable — i.e. not down and locked. The ice observers groan "Oh no, not again!" Last week, on a nose wheel yellow, the captain flew on to Frobisher to take advantage of its longer landing strip. But today, he decides to land at Resolute in spite of the yellow light. The Electra touches down with a heavy thump, hard enough to engage the wheel lock. The yellow light turns green. Everybody cheers.



Manning one of the key monitoring posts aboard the Lockheed Electra, an AES ice observer keeps eyes and ears trained on the sophisticated remote sensing equipment.

7.00 p.m. Landed. Disembarked. Still broad daylight. George knows that messages about the day's flight — duration, distance travelled (2000 km), maps transmitted, ships talked to, etc. — are being picked up by the coast guard marine radio station and relayed via satellite telephone to Ice Central.

Before turning in for the night at the same air hotel, George's last duty is to check the coordinates for tomorrow's flight. This flight probably won't differ that much from today's. All the same, he dozes off with the feeling that he is leading an interesting, varied and useful life.

French radio broadcasts in B.C.

From September 1982 to May 1983, seven Francophone meteorologists from the Pacific Weather Centre (PWC) participated in a unique series of radio broadcasts. The series, which dealt exclusively with weather and weather services, was aired in cooperation with Radio-Canada (CBC) in Vancouver and had two aims: to increase French listeners' knowledge about weather and to inform them of the various types of forecasts issued by PWC.

For a number of years, now, we have been providing morning weather reports on CBUF-FM, the Radio-Canada affiliated station on the Pacific Coast. CBUF has been broadcasting on FM for more than fifteen years. It has almost fifty thousand listeners living in the area from Vancouver to Dawson Creek, in the north-eastern part of the province.

Every morning we prepare three bulletins of approximately two to three minutes in length, giving a description of the location and movement of the various cloud systems and a brief forecast for the various regions served by CBUF.

Over the years, we have established excellent relations with the CBUF staff and have had direct input into the forecasts broadcast to French-speaking listeners.

The format of these presentations, however, did not allow us to elaborate on scientific matters that might be of interest to the listener.

Series of broadcasts

Consequently, in the fall of 1982, we decided to develop in cooperation with CBUF a series of programs dealing exclusively with weather. Entitled simply, "La Météo", the series, was divided into two parts.

(Continued)

The first part dealt with the products put out by the PWC. It aimed primarily at explaining the meteorological elements of the aviation, public and marine broadcasts.

The second part examined theoretical aspects, such as fog formation, climate modification and the use of weather satellites.

For the meteorologists who took part, the series provided an opportunity to gain experience in preparing and presenting information in a structured interview format to be broadcast to a diversified audience.

The meteorologist, who was responsible for his subject matter, would determine with the radio announcer the scenario for the interview, the objectives, the concepts to be presented, the order of presentation, and the time allowed. He would then go to the library to do the necessary research to expand on the subject matter. The information would be subsequently prepared according to the interview plan. Finally, the interview was recorded over the telephone or in the studio, depending on the wishes of the meteorologist.

A total of twenty programs were broadcast between September 1982 and May 1983.

During this period, Jacques Albert, Pascale Blanchet, Barry Brisebois, Claire Lauzé, Daniel Poirier, Michel Roch, and myself, took part in the series. Phillipe Bourbeau, of Radio Canada, hosted the interviews.

Although the French-speaking team has changed appreciably since the series ended, with the departure of some meteorologists and the arrival of new recruits, we have continued our close association with CBUF.

Prospects

In a society where increasingly wider use is being made of the means of communication, we might ask ourselves the following. Would it be of interest for an organization such as AES to produce this type of series in other regions and in either official language?

Such a series would increase listeners' knowledge of the services offered by AES and of a fundamental aspect of their daily life, namely weather.

André Cotnoir, CMP

Zephyr Breezes * *

Two Winnipeg Weather Office briefers, acting OIC Larry Funnell and associate Bob Cooke, broke routine last September for an exciting week as on-the-spot weather advisors to a thousand Ontario Ministry of Natural Resources firefighters battling major forest fires just across the Ontario border.

While Bob headed for Dryden, Ont., Larry spent his first day travelling 300 km by car, 200 km by jet and giving six hours of weather briefings at Red Lake Fire Centre. He obtained his weather data from the Prairie Weather Centre by using a portable computer terminal or by making telephone calls to the Winnipeg weather office.

He gave morning and afternoon briefings each day at Red Lake to the manager, fire bosses, pilots and other personnel, then in the evening went by helicopter to three major fire camps to give further briefings. It took three hours to complete the evening circuit alone.

The briefings included general weather synopses, plus data on cloud cover, forecast temperatures, wind speed and direction, humidities, ceilings and visibilities. What with telephone and unscheduled briefings, Larry worked a 14-hour day, but he says it was a tremendous experience.

★ ★ ★ ★

What do you write home about when you spend a month working on an international wind experiment in the remote Scottish Outer Hebrides *two years in a row?* Karl Vanek, technician with the seven-man AES contingent says in a postcard, to AES "Remarkably, even 160 km/hr winds didn't knock our towers down. The sheep were glad to have us back. The hill is as steep to climb as ever."

Adds Canadian project leader Hans Teunissen (ARMA) in another postcard, "This certainly isn't Italy. Same old sheep, rain, fog, etc."

★ ★ ★ ★

With AES conference travel still quite heavy, Bill Markham, director, Special Ice Studies (Downsview) recalls an article in *Science* during the palmy days of 1969.

Titled "Migratory Habits of the Scientific Goose", it explains that nesting areas are found in all habitable regions, but tend to be near big cities. Individual birds from far flung bases travel vast distances to flocking sites where they engage in the "ritual ceremony" or "symposium" lasting an average 5-7 days. "During this activity the individuals one by one take a position facing the others and cackle loudly in turn. Analysis of these sounds has demonstrated characteristic cackling patterns for each individual, the only variation being the addition of a few novel sounds at the end and the omission of a like number at the beginning of each presentation."

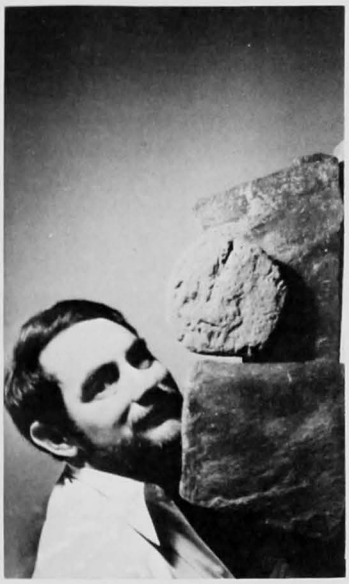
Conferences on the bird's strange travel habits were reportedly held in Tahiti and the French Riviera.

★ ★ ★ ★

To some people translating an AES instruction manual from English to French is like converting a set of dials from analog to digital . . . or like disembowelling an overstuffed dictionary. But for professional translator Daniel Pokorn, working at AES Downsview, a good, meaty translation goes beyond technicalities and becomes a work of art. Daniel also happens to be a professional sculptor (Membership chairman of the Sculptor's Society of Canada), so naturally he views his texts as raw material waiting to be carved into the forms and textures of another language.

Born in France, he assisted his father as a stone-cutter, taught art in Tunisia under French government patronage, then came to Canada in 1968. Wrought in alabaster and marble, Daniel's works are in turn romantic, fantastic, semi-realistic and classical. He has exhibited widely in Ontario and contributed to the Sculptor's Society's permanent collection which toured Canada and the U.S. in 1982. None of his oeuvres are directly influenced by meteorology, but he has produced a series, "Suns and Mountains", inspired by Canadian landscapes.

Zephyr Breezes * *



Daniel Pokorn

The 8th international Climate Diagnostic Workshop held (for the first time) in Canada in October in Downsview entailed busy days and nights for local organizer Jacob Padro and co-host Gordon McKay, Phil Merilees and many others. The media were very demanding — ID was to blame — with radio, television and newsmen quizzing the experts on the subject of carbon dioxide and the greenhouse effect. But the workshop had its lighter side and at a banquet of the (mostly United States) participants a trio of Southern Songbirds gave their impression of a barbershop quartet, minus one. To the strains of Oh! Tannenbaum Messers Kates, Heathcote and Santer delighted the group with a sometimes melodious rendering of these verses (and many others):

Oh Climate Change, Oh Climate Change
How can you be so stubborn?
You do not do what we expect
Our theories all are incorrect
Oh Climate Change, Oh Climate Change
How can you be so stubborn?

Oh Climte Change, Oh Climate Change
What is your forcing function?
Oh could it be volcanic dust
Dispersed when old El Chichon bust?
Oh Climate Change, Oh Climate Change
What is your forcing function?

Ontario, Ontario
Your climate is so beautiful!
Your landscapes too and food devine
And not forgetting, of course the wine!
Ontario, Ontario
Please do not change your climate!

O AES, O AES
Your building is so handy
The coffee here is bountiful
For those with pockets that are full
O AES, O AES
The Workshop is so dandy!

★ ★ ★ ★

Did you know that there is a connection between the consumption of deep fried chicken and the occurrence of "fowl" weather in a particular area? This "poultry" piece of trivia emerged when the Canadian Climate Centre's David Phillips addressed the Willowdale Ontario Rotary Club on the topic of climatic effects on retail sales.

During the discussion a man in the audience who ran a fast food chicken outlet explained that when weather was fine people dropped by in the early evening to pick up their supper time snacks. When weather was miserable, however, customers collected their orders between 4 and 6 pm on their way home from work. It was a climatic law from which there was very little chickening out.

★ ★ ★ ★

Dr. Peter Taylor, a research scientist with the Boundary Layer Research Division at Downsview headquarters has recently been elected a member of the International Commission on Dynamic Meteorology. He joins Dr. Ian Rutherford, director, Meteorological Services, Research Branch as the second AES member on the 26 person body consisting entirely of working scientists from such countries as Kenya, Switzerland, Ireland, China, the U.S.S.R, Bulgaria, Brazil, Japan and the United Kingdom.

Dr. Taylor's appointment is for a four-year term and comes at a time when Canada is actively involved in a number of dynamic meteorological projects, for example the HEXOS Humidity Exchange over the Sea experiment, organized by the Bedford Institute of Oceanography. Although ICDM is "low on budget", Dr. Taylor feels it is an ideal forum for international cooperation at the working level, especially in such relevant areas as boundary layer studies and global circulation.

★ ★ ★ ★

Now to end the column, two miscellaneous humor items. First, a poem submitted anonymously to a meteorologists' newsletter:

A farmer once named his cow Zephyr,
She seemed such an amiable hephyr.
When the farmer drew near,
She kicked off his ear,
and now the poor fellow is dephyr.

. . . and second, a climate station report received by Norm MacPhail, head of the Canadian Climate Centre's data acquisition section, has the word *Trace* written in for the rain gauge recording, and underneath the comment, "Black hornet jamming hole, found on August 8, 1983 after heavy rain storm."

On May 1, 1871 the Governor General approved a Minute of the Committee of the Privy Council in which it was recommended that "The proposed expenditure for meteorological and climatological purposes of $5,000 be authorized and that the expenditure of the appropriation for this purpose be placed under the direction of the Department of Marine and Fisheries . . ." This government action effectively launched a new service — The Meteorological Service of Canada.

STAFF CHANGES

Promotions/ Appointments

R. Honch (MT-2) Meteorologist, WAEMR WC1, Edmonton, Alta.
P. MacDonald (EG-5) Obs/Pres. Tech., WAEMR WC1, Edmonton, Alta.
S. Ricketts (MT-6) Meteorologist, ACET, Downsview, Ont.
G. Hemmerick (EG-7) Instructor, MTC, Cornwall, Ont.

T. Smith (EG-5) Pres. Tech. WO4, Sault Ste. Marie, Ont.
M. Loiselle (MT-6) Meteorologist, OAEST, Toronto, Ont.
K.A. Almquist (AS-2) Admin. Officer, ARPO, Downsview, Ont.
S.C. McLeod (MT-7) Meteorologist, ARMS, Downsview, Ont.

A. Sandford (DA-PRO-4) Group Leader, ACPO/DE, Downsview, Ont.
K.L. Garrison (CR-3) Clerk, MAEAF, Bedford, N.S.
G. Richard (CS-1) Programmer, CMCOD, Dorval, P.Q.
K. O'Connor (CR-3) Clerk, PAEAR, Vancouver, B.C.

A.E. McCarthy (EG-6) OIC, WS1, Hall Beach, N.W.T.
R.T. Bowser (EG-4) U/A Tech. WS1, Hall Beach, N.W.T.
M.D. D'Amours (EG-4) U/A Tech. WS1, Hall Beach, N.W.T.
G.L. Marciski (CR-4) Clerk, CAED, Winnipeg, Man.

A. Rahill (MT-3) Meteorologist, WO1, Winnipeg, Man.
H.B. Kruger (SM) Director Planning, AFDP, Downsview, Ont.
R.J. Spokes (EG-5) OIC, WS1, Moosonee, Ont.
J. Millar (EG-6) Pres. Tech., WO4, Lester B. Pearson Int'l. Airport, Ont.
D. Jacob (MT-3) Meteorologist, METOC Centre, Halifax, N.S.

P. Cromwell (MT-3) Meteorologist, CFB, Greenwood, N.S.
M. Pindam (PC-3) Oceanographic Specialist, METOC Centre, Halifax, N.S.
D. Bancroft (MT-4) Meteorologist, CFB, Edmonton, Alta.
L. Sneidman (CS-1) Programmer, CIDO, Dorval, P.Q.

Transfers

L. Grahn (EG-4) Aerological Tech., WAEOO, Edmonton, Atla.
C.L. Smith (EG-4) U/A Tech., WS1, Eureka, N.W.T.
D. With (EG-4) U/A Tech., WS2, Resolute, N.W.T.
A.D. MacIver (EG-4) U/A Tech., WS1, Alert, N.W.T.
D.F. Lahn (EG-4) U/A Tech., WS2, Mould Bay, N.W.T.
M. Huot (EG-2) Met. Tech., QAEOO, Mirabel, P.Q.
D. Coulombe (EG-2) Met. Tech., QAEOO, Baie Comeau, P.Q.
Y. Gervais (EG-4) U/A Tech., QAEOU, Kuujjuaq, P.Q.
H.A. Austin (MT-5) Staff Officer Special Services, DMETOC, Ottawa, Ont.
B. Friesen (MT-5) Base Met. Officer, CFWS, Moose Jaw, Sask.
R. Bailey (MT-2) Met. Development Level, Esquimalt, B.C.
S. Johnson (MT-2) Met. Development Level, CFWS, Halifax, N.S.
S. Blackwell (MT-2) Met. Development Level, CFWS, Greenwood, N.S.
J. Patterson (EG-4) U/A Tech., WS2, Norman Wells, N.W.T.
K. Leonard (EG-2) Met. Tech., WS3, Slave Lake, Alta.
W. Lawrynuik (SM) OIC, OWC, Toronto, Ont.
B. Greer (MT-7) Chief Meteorologist, OWC, Toronto, Ont.

Temporary or Acting Positions

O. Koren (MT-7) Head, Coordination and Evaluation, ACRA, Downsview, Ont.
P. Pender (SM) Director, ACSD, Downsview, Ont.
R. Stark (MT-7) Special Project, Ont. Region and Headquarters.
P. Chen (MT-7) Meteorologist, OAESQ, Toronto, Ont.
N. Cutler (MT-7) Chief, Data Acquisition, OAEO, Toronto, Ont.
R.A. Cooke (EG-6) Pres. Tech., WO1, Winnipeg, Man.
B.R. Fehr (EG-6) Pres. Tech., WO1, Winnipeg, Man.
J.H. Alexander (MT-6) Meteorologist, APDG, Ottawa, Ont.
J.L. Paré (EG-6) OIC, QAEOU, Kuujjuaq, P.Q.
M. Lessard (EG-6) OIC, QAEOU, Maniwaki, P.Q.
P. Sigouin (EG-7) Supervisor, QAEW, Dorval, P.Q.
D. Besner (EG-7) Supervisor, QAEW, Mirabel, P.Q.
R.B. Saunders (MT-7) Head, Economic and Envir. Weather Services, AFWC, Downsview, Ont.
M. LeBlanc (MT-6) Meteorologist (MOP), AFWC, Downsview, Ont.
B.W. Veale (MT-6) Meteorologist, DMETOC, Ottawa, Ont.
J. Falkingham To be Determined, A/Chief, Ice Products Development, ACIP, Ottawa, Ont.
J. Bullas (MT-7) OIC ALWC, WC1, Edmonton, Alta.
N. Parker (MT-7) OIC ARWC, WC1, Edmonton, Alta.
N. Meadows (SM) Chief, Forecast Ops., WC1, Edmonton, Alta.
P.W. Galbraith (SM) OIC, MAEM, Bedford, N.S.

Departures

D. Adams, WC1, Edmonton, Alta. to Canadian Forestry Service.
L. Langevin, WC1, Edmonton, Alta.
M. Harrison, WC1, Edmonton, Alta.
C. Hayward, WC1, Edmonton, Alta. to University.
L. Fillion, WC1, Edmonton, Alta.
D. Nearing, OWC, Toronto, Ont.
B. Becraft, PAEAR, Vancouver, B.C.
O.L. Keating, WO1, Winnipeg, Man.
R. Lepine, WS3, Coronation, Alta.
E.M. Feschuk, WO1, Winnipeg, Man.
A. Zito, CFWS, Trenton, Ont. to Agriculture Canada.
H. Auld, CFWS, Trenton, Ont.
D. McCulloch, CFWS, Trenton, Ont.
E. Loder, METOC Centre Halifax — CFWS, Halifax, N.S.

Leave of Absence

J. Sadubin, QAEM, St-Laurent, P.Q.

Retirements

R. Perras, QAEOO, Ste. Agathe, P.Q. October 1983.
R.S. Boileau, Montreal WO, Dorval, P.Q., October 1983.
H.R. Armstrong, CFWS — Directorate of Met. and Oceanography, Ottawa, Ont., October 1983.