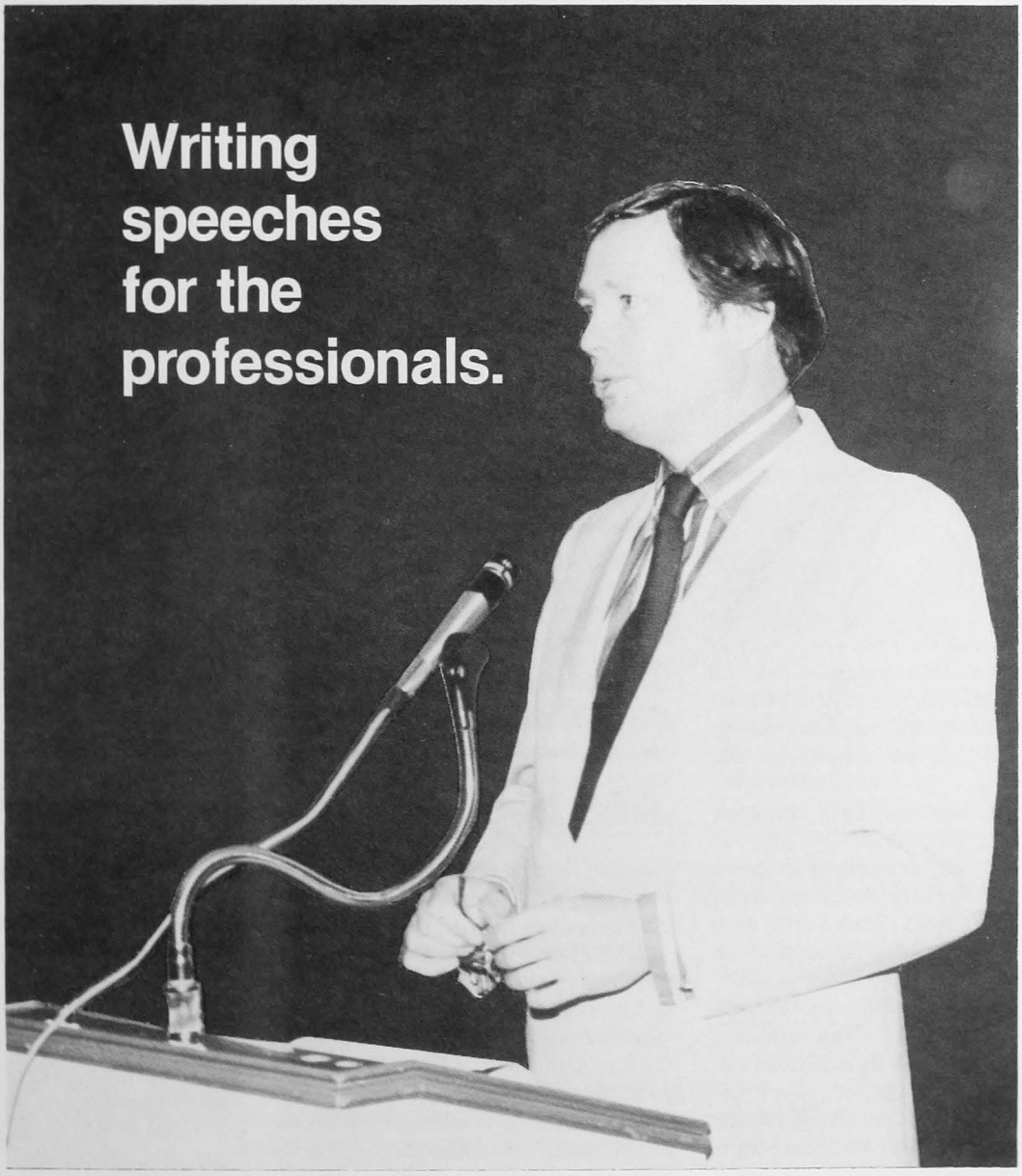
November/December 1982

ZEPHYR



Environment Canada
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NEWS

Bullet-holed buoy hits Thursday Island

A recovered Hermes buoy is displayed in the lobby of the AES building, Downsview.

An AES Hermes buoy, deployed four years ago in the South Pacific under the First GARP Global Experiment (FGGE) was recovered this fall in bullet-riddled condition by Australian weather officials after it was washed ashore on Thursday Island off north east Australia.

On hearing of the find, AES officials in Downsview, Ont. requested that the buoy's equipment: transmitter, antenna and pressure sensor be returned to Toronto for possible reassembly into another buoy.

The buoy, deployed by a container ship in December 1978 as part of FGGE's "Global Atmospheric Research Project" had a weather observing life of 316 days. Then from October 1979 until its recovery, it just drifted aimlessly in the Pacific.

Australian weather officials reported that the buoy was in good condition "apart from some bullet holes below the waterline."

Canadian officials speculated that the buoy might have been used for target practice by local sharpshooters who possibly mistook it for a wartime mine.

Dr. John Garrett of the Institute of Ocean Sciences, Victoria, B.C., says that recovery of FGGE buoys in Australasian and Indian Ocean waters was not all that uncommon. (Canada alone had deployed 69 of them). However, he added that this was probably the first time a buoy's equipment had been shipped all the way back to Canada.

Zephyr Highlights

Cover:
Writing a speech is a major challenge and a fine art whether you deliver it yourself or prepare it for someone higher up (e.g. Environment minister John Roberts, shown on cover). Turn to page 5 for the full story.

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AES begins four-a-day forecasts

Starting November 1, AES increased the frequency of the regular public weather forecasts from three to four times daily. The additional forecast is being issued in the evening and includes updated weather information for that night and the next day, with an outlook for the following day.

DOE implemented this increased service in response to a request from the broadcasters for a scheduled update of weather information in time for late evening radio and television news broadcasts.

That request, and one for the probability of precipitation forecasts, implemented in July, were among 13 recommendations made in March 1982 by a task force on weather services to the broadcast media. The task force included representatives of DOE's weather service and of the Radio & Television News Director's Association.

DOE will continue to issue forecasts in the early morning, the forenoon and the afternoon. The morning and forenoon forecasts give weather information for that day, that night and the following day. The afternoon forecast covers that night and the next day and includes an outlook for the following day.

The increased service reflects DOE's commitment to improve the quality and dissemination of weather information for all Canadians.

ADMA's message: "Some lights are beginning to shine"

ADMA Jim Bruce

This new year message comes at a time when Canada is facing its most difficult economic conditions in many decades. For AES as a whole, this has meant curtailment of some valuable programs to reduce budgets, and fewer staff members to do the jobs we must do. For individual staff members, it has meant restrictions on salary increases.

However, such a time of restraint allows an organization such as ours to show its true colours. Some very inventive ways of maintaining output while reducing costs have been suggested and developed by staff members at all levels. Individuals have worked harder to ensure that, in spite of staff shortages, the quality of our products has not deteriorated and our reputation as one of the world's great weather services remains intact. We can also be proud of the leading role AES staff has played in 1982, often well beyond the normal call of duty, in laying the scientific basis for an air pollution control agreement with the U.S.A., to help solve the "acid rain" problem. Even at the personal level, AES staff members have "dug deep" to help the many unemployed and less fortunate members of society through strong responses to United Way campaigns and in other ways.

As I write this, interest and inflation rates are falling and some lights are beginning to shine through the economic gloom. However, 1983 will be a year of continuing severe budget constraints, and these will likely be relaxed only very slowly in light of the size of the federal government deficit. We can still think positively of new ways of doing things in our services to the public, but we must do these in ways which minimize costs.

During 1983, we will be having an independent team review the levels of service we provide to our special clients and the general public. This, along with the work on the forecast production system by Pat Pender and his team, should allow us to chart an exciting course for AES for the balance of the decade.

Your hard work over the past year, and contributions to AES and to the people of Canada, are greatly appreciated. I wish you and your families a happy, interesting and productive year in 1983.

Jim Bruce
Assistant Deputy Minister

Des O'Neill — Atlantic Region Director

Des O'Neill has been appointed Regional Director of AES's Atlantic Region, replacing Ralph O'Brien who died in September.

Mr. O'Neill has had 22 active years in meteorology, starting in Northern Ireland (U.K.) in 1960 as an operational meteorologist. He then moved to Canada and had a number of meteorological posts until 1968 when he became a hydrometeorologist and then in 1973 he joined Scientific Services as a meteorologist rising to become Chief of Scientific Services in the Atlantic Region. Between 1974 to 1982 Mr. O'Neill was acting Chief of Weather Services and Officer-in-Charge of the Atlantic Weather Centre. He has been acting Regional Director, AES Atlantic Region since May 1982.

Mr. O'Neill has authored a number of papers on Hydrometeorology and Meteorological/Climate applications along with holding a part-time appointment teaching meteorology as Adjunct Professor of Physics at Dalhousie University.

Des O'Neill

Crisis of rape seminar held at AES

Last September, the Equal Opportunities for Women (EOW) Committee sponsored a seminar on "The Crisis of Rape". The seminar was held in the AES Auditorium in Downsview and was attended by approximately 30 people.

Constables John Smissen and Brian Maxwell from 32nd Division of Metro Toronto Police presented a film illustrating a few classic examples of rape situations and how the rape victim might have prevented the situation or defended herself. This was followed by an informative talk on rape prevention and the rights of the rape victim.

Ms. Stacey Michener, representing the Rape Crisis Centre, was present to give an overview of the function and responsibilities of the Centre and the support that is provided to a rape victim in the aftermath of rape. Had Ms. Michener presented a more complete description of the work of the Rape Crisis Centre, the audience would have been left with a better impression of what the Centre actually does. She emphasized the self defence aspects and challenged the police on many points of their presentation, i.e., the negative attitude against rape victims and the difficulties en-

countered in trying to win a conviction if the case was ever brought to court.

The seminar was held because rape attacks in large Canadian cities are increasing at an alarming rate. For many years, rape has been avoided as an issue. As a result, many myths and negative attitudes prevail. It is important to destroy the false ideas about rape and to have people understand the problems facing the rape victim and to offer emotional support to her. These are some of the objectives of the Rape Crisis Centre which opened in February 1974. The Centre attempts to assist women with all the problems that arise from the crisis: they have gone to the hospital with them; they have talked to their families to help them understand; and they have accompanied them to the police and to court. Through the entire crisis of rape the woman herself may have feelings of guilt and self-blame. The Rape Crisis Centre offers counselling and group sessions so that the rape victim does not have to handle these feelings alone.

Rape can happen to any woman. Through a worthwhile organization such as the Rape Crisis Centre and seminars such as this one, women are now realizing that they are potential victims and are now prepared to defend themselves in possible attack situations.

Mary Skinner retires

Retiring AES head librarian Mary Skinner receives a presentation from director of Finance and Administration Joe Boll at a ceremony held in her honor.

Last November a retirement party was held to mark the end of Mary Skinner's 35 years of service as AES chief librarian. Miss Skinner filled the post left vacant by Alvin Thiessen in 1947 when the library formed part of the Administrative Branch of the Meteorological Division of the Air Services Branch of the Department of Transport. At that time the library had just been changed from a collection of exchange material with other countries into a modern working meteorological library.

Before working for DOT Miss Skinner had worked in the Toronto Public Library. After serving in the women's division of the RCAF overseas in England, she returned to work in the library of Imperial Oil until her term with DOT.

With the assistance of Dr. Warren Godson, Miss Skinner classified a vast array of meteorological topics into library categories. She also increased the number of journals the library receives, from 60 in 1947 to over 500 when she retired. In 1976 she helped introduce automation to the library, newly linked to the Environment Canada library by computer.

Miss Skinner was Toronto president for four years of one of the world's most prominent library organizations, the Special Library Association. She also held major positions in the Ontario Library Association, the advisory council of Seneca College library and the Provincial Council for Libraries. She was also on the University of Toronto Senate for 12 years, representing the Faculty of Library Sciences.

A large crowd was in attendance at the reception, including former Met. Service Directors, Reg Noble and Dr. Patrick McTaggart Cowan. Several AES Directors General also attended as well as Mrs. Agatha Bystram, director of libraries for EC. The Special Library Association presented Miss Skinner with a citation for her 35 years achievement in library science — the first time the organization has made such an award. Speakers included Mrs. Bystram, Joe Boll, director, Finance and Administration Branch and Morley Thomas, director general Canadian Climate Centre, who gave an informal synopsis of Miss Skinner's career with the AES. Acting chief librarian Jan Glover was MC.

Miss Skinner hopes to spend part of her retirement hiking the Bruce Trail, and the rest with her hobbies: reading and Scottish country dancing.

One of her retirement gifts was a pair of opera glasses, and she says she will make good use of them since she plans to attend many opera and theatre performances.

Gérard Chapleau

The Quebec Region lost a friend, November 24, when climatologist Gérard Chalpeau died of a heart attack. Gérard began his career as a meteorological technician with the Armed Forces, serving a total of twenty years at bases in Bagotville, P.Q. Baden-Baden, Germany and Uplands, Ontario.

It was during this period that Gérard acquired the necessary skills to become a climatologist.

In 1970, he left the Armed Forces and joined AES, Quebec Region as part of the new climate service. He created this service from the ground up by hard work as a prelude to the high operational standards now in vogue.

Cheerful and alert in temperament, he will be greatly missed by his colleagues and the many friends he has worked with over the years. Gérard is survived by his wife and seven children.

Suppose you are asked to prepare a speech

AES employees have a reputation for doing serious, scientific work, yet many of them get to play a social role. Sooner or later they will be invited to give a speech. Or failing that, they will be asked to *write* a speech for someone at the ministerial, managerial or supervisory level.

The American humorist Mark Twain once said, ". . . it usually takes more than three weeks to prepare a good impromptu speech." He was exaggerating of course, since there is no such thing as a successful, "off-the-cuff" speech. Preparing an address takes knowledge, research, patience and time. If you include time for reflection, library research or interviewing "experts", it all adds up to a lengthy period. The yardstick is to allow one hour's work for every minute of actual speech delivery.

Although it rightly ranks as a social occasion, a speech is far from being an entertainment. Public speaking nearly always has a goal. Its basic duty is to inform and give fresh insights, but it can also be used for "pep-talks" or morale boosting. It is an ideal tool for convincing people to change their minds, and it can even stir them on to action.

Organizing the structure

Like most forms of communication, a speech has a definite structure. A brief opening section is followed by a clear enunciation of the thesis. This is further expanded in the body of the speech and is usually broken down into three or four main points. The close of the speech should be brief and challenging, and aim to leave the audience with a lasting impression of the speaker.

The first 15 seconds of the speech should avoid serious argument and simply establish the speaker, create goodwill and try to set up a common bond between audience and orator. If it blends in naturally with your style, it's a good idea to throw in a short anecdote or humorous story, but it is unwise to use gimmicks. Telling certain jokes can actually be risky, putting the speaker in a win or lose situation. A better way of pleasing your listeners is to pay them a good, honest compliment.

George McPherson, director AES Ontario region, is frequently asked to give speeches about his work and AES policy to a wide variety of audiences. He always writes his own.

Organizing the body of the speech is the main task. There are several approaches, depending on your work patterns and way of thinking. One method is to place the speech components into shoeboxes. One configuration could arrange them geographically into "land", "air" and "underwater" boxes, another chronologically into "past", "present", and "future". A persuasive speech could divide up into just two boxes, labelled "problems" and "solutions". Of course there's no need to use physical shoeboxes. Speech components can be organized with lists, cards or paste-ups.

Whatever method you use, you will likely be injecting a few main points into the body of the speech. These should be brief and clearly numbered, and to avoid confusion, should not go higher than four. As you enumerate the various arguments, you should throw in such transition phrases as "turning to", moving on then", or "recapitulating".

Assertion contains logic, emotion and integrity

One problem facing many speakers is that they are forced to give "assertive" arguments without wishing to sound too aggressive. This assertiveness has nothing to do with the subject. It is just a facet of all speeches dating back to Aristotle. By their very nature theses contain assertions or statements that are either clear or unclear, true or false.

The speaker's aim is to persuade listeners to *believe* an assertion. Aristotle said this could be done in three ways: by appealing to logic, the emotions or the speaker's integrity. The first is realized through presenting a good, strong well-reasoned argument. The second might require you to drum up feelings, from defending patriotism against personal greed, to instilling fear of pollution or energy shortages. (Don't overdo it however, or you will turn yourself into a scaremonger). Finally, you can convince through the power of the speaker's own character or integrity.

There is a problem if you are writing the speech for someone else at a higher level. Often heavy workloads or protocol prevent access to the speaker and stop the writer from carrying out a personal interview. In many cases you will have to learn from associates, friends or members of the speaker's own family

what the speaker's real personality is like, including details of his/her background, hobbies and outside interests. You must certainly obtain enough to work in a few personal references. As a last resort you can dig up past speeches or policy reports from the files and follow the same style and philosophy.

To write for someone else you should also know something about his delivery and the way he is received by an audience. This involves doing "audience research": assessing the size, composition, friendliness or potential hostility of the crowd the speaker is likely to face. If you will be writing more than one speech for the same person, it is wise to attend the speaking engagement personally and watch the performance yourself. Check to see if the speaker sounds natural or pompous and egotistical. If the latter is the case, try and prevent him using words like "honest" and "candid" since these tend to make him seem insincere.

If you are asked to make a persuasive speech, you should know how to present pro and con arguments. If the audience is reasonably receptive and intelligent, you should have no trouble presenting both sides. It should be done subtly however, and with minimum use of "loaded words". Terms like "profit" or "exploitation" can backfire, and it is better to stick to safer words like "earnings" and "utilization". The way to use a counter-argument is to state it, acknowledge its validity, then move on. Or you can mention the counter-argument, then immediately refute it. Never apologize.

Ending a speech should take around 30 seconds. The close should be clear, definite, and should restate the main thesis briefly and forcefully. If possible, wrap the whole thing up with a suitable quotation. You should end with a strong, affirmative rhythm, and if you can work in a thank you to the organization that invited you without slowing the pace — so much the better. Leave the audience with a challenge, a sting in the tail, and a vivid memory of the speaker.

Useful style rules

The majority of AES personnel addressing local clubs or associations will likely keep their remarks at the information level, whether they describe the operation of a weather office or outline their fight against acid rain. Other, more senior personnel will be called to give "pep-talks" at long service awards, or retirements. At a still higher level AES officials will be required to give speeches on important environmental issues with the object of calming or arousing public opinion. And the most skilled of all will be asked to change people's opinions, or stir them on to new action. Whichever type of speech you give or prepare, there are some useful style rules to follow:

Use a conversational, not a formal written style. Avoid big words you would not use in everyday talk. Be concise, succinct and to the point. Speeches commonly suffer from information overload. You can often cut the draft copy in half, and with a little polishing, come up with an excellent speech. Be careful about the rhythm. Alternate long sentences with short ones, even brief phrases.

When you have finished, read the speech into a tape recorder, or if you are writing the speech for someone else, get them to read it out loud. Sometimes a senior official who feels too inhibited to rehearse with his peers, succeeds admirably with an aide.

Be clear, accurate and specific. Avoid jargon, incomprehensible to outsiders. Avoid sexist allusions like "An Englishman's home is his castle" or calling a grown woman a girl. Use forthright, vivid language that makes your audience both *feel* and *smell* your point as well as hear it. Relating earthy facts like: "Ten pounds of manure is enough to hatch 12,000 flies" is one way to make an audience sit up and take notice. Humor should only be used where relevant and when it does something to help the speech along. It should be fresh, in good taste, and culled if possible from your own experience. Since printed humor often falls flat, make it appeal to the ear.

Audio visual aids

The old adage about one picture being worth a thousand words is an exaggeration as far as public speaking is concerned. While many oral presentations can be enhanced with the use of slides and other audio-visual material, they can also become cluttered with too many explanations trying to keep pace with too many frames. A dozen well chosen, well-placed slides, accompanied by brief commentaries may add substantially to the value of a speech but, they can never replace its true purpose to convey facts and arguments verbally. Even when showing, it is best to keep the room fully lit all the time.

Some speakers also like to hand out pamphlets and other information material at the end of the speech. This is often a good way of making an audience remember what you said after you have left the hall. There is a danger, however, that hand-outs distributed or circulated while you talk will distract audiences from absorbing your remarks. In contrast to slides, it is best to wait until the speech actually ends before distributing the pamphlets.

Establishing priorities

If you are writing a speech for someone else, a major concern is to give yourself enough lead time. The one-hour's-work-per-one-minute-of-speech rule is certainly worth considering. It means that an "ideal" 20-minute speech is going to need 20 hours of preparation. The speaker should prepare guideline material for the speech writer well ahead of time. This will enable the writer to establish the right priority for the speech in question, do the necessary research, obtain the needed approvals and establish procedures for word processing.

At first glance it may seem unusual that a service, whose stock in trade is in-depth research and scientific observation, should spawn an army of public speakers. But it is obvious that everyone from the presentation technician relating the intricacies of his job, to the Minister defending a thorny environmental issue before a testy group of businessmen, needs a public platform to communicate.

Props for writing a speech: typewriter, dictionaries and a shoe box for sorting ideas.

European Weather Services impress AES visitors

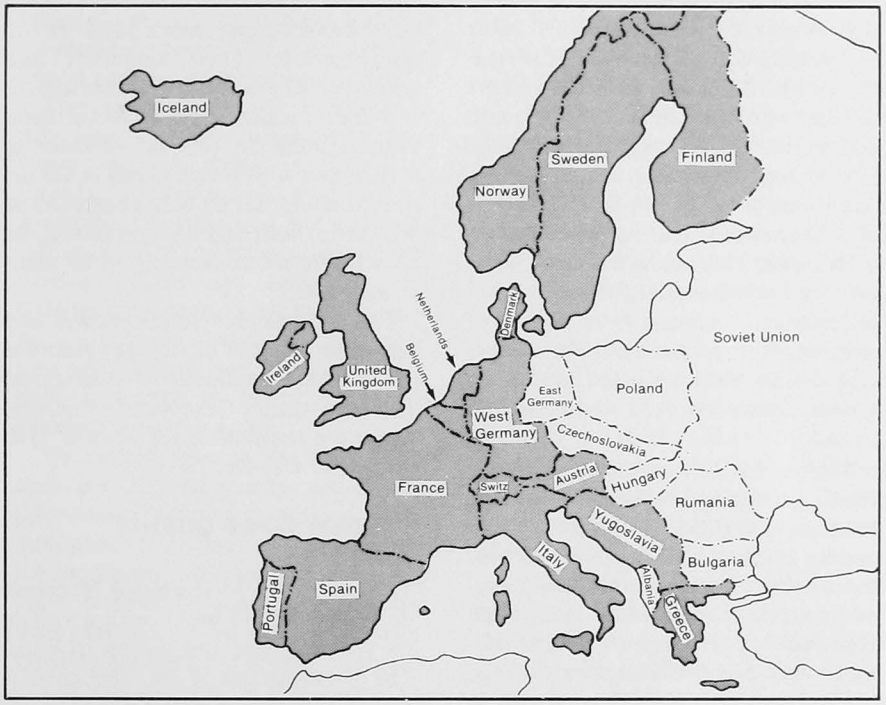
In summer 1982, Ray Fichaud Director of Quebec Region and Hubert Allard Chief of the Quebec Meteorological Centre, toured facilities of the national meteorological services of France and the United Kingdom and the European Centre for Medium-range Weather Forecasts (ECMWF).

The visits were arranged to give the regional staff some exposure to meteorology as practiced in other countries and to receive, provide and exchange information on operations. In addition, valuable personal contacts with officials of the other agencies were established.

Their first stop was the ECMWF, which is an international agency supported by 17, mainly western European countries. The centre is located in a pleasant wooded area in Reading, England, which is about 40 kilometres west of London. About 143 permanent staff work there, with on average, an additional 10 visiting scientists from other countries in residence at any one time. The Centre operates on an annual budget of about £7.0M; the contribution by supporting States is proportional to their respective gross national products. A CRAY-1 vector processor and a CDC CYBER 175 are the Centre's main computers.

The ECMWF was established in 1975, primarily to carry out research in weather prediction using numerical methods. In 1979 it also began preparing medium range (4-10 days) forecasts on an operational basis. The Centre also makes available about 25% of its computing capacity to the meteorological offices of member states for their research, particularly in numerical forecasting. The ECMWF's Director, Lennard Bengtsson said "This competition from scientists from member states in the field of NWP is proving to be a real driving force for the scientists at the Centre."

As for their performance, the ECMWF forecasts are considered to be very accurate to 3-4 days. Those member countries that compare the ECMWF forecasts to their own claim that the Centre's 24-hour forecasts are as good as the best 12-hour forecasts produced by the best of the national weather centres. However, they still believe there is room for improvement. E.g. the experts at the Centre believe that the useful predictability of forecasts can be extended by 2 or 3 days by refining the basic data without modifying the models themselves. In this context, officials at the ECMWF told the visiting Canadians that they hoped that no further arctic weather stations would be closed, because this would adversely affect their numerical weather predictions especially in the mid-range of about 4 days.



Countries belonging to the ECMWF are shown shaded on this map of Europe.

The Centre has developed a model of the atmosphere which uses global grid points at slightly more than every 2° latitudes and longtitude and 14 levels in the vertical. Operationally the Centre's policy is to rule out bogussing on site in favour of automatic monitoring, unless radiosonde data are not available over the southern hemisphere. Then they will use derived data from Australia.

The Canadians found the ECMWF's communications facilities for data input and processed output quite advanced. All data are issued in digital grid point form and are confined to temperature, wind and humidity. Thus, the ECMWF does not actually provide forecasts to member states but gives them the prognostic material to allow each national weather service to develop its own forecasts.

Of the visit to ECMWF Ray Fichaud said "The entire operation smacks of efficiency and effectiveness. The team is highly competent and enthusiastic, and the facilities for research and operations are excellent."

Many U.K. services commercial

The group then travelled to Bracknell, 50 kilometres west of London to the headquarters of the U.K. Meteorological Office (UKMO). They began their visit with a discussion with Dr. Fred Bushby, the Deputy-Director. Although he spoke of many things, Dr. Bushby exphasized the UKMO's policy to charge for all services if at all possible. Thus the UKMO recovers about one third of its total financial expenditures through revenue.

Private meteorology is viewed as being in direct competition with the UKMO, quite a different view than what is taken here in Canada. Private firms do not obtain data in an official way from the UKMO although they do pirate some off the air (radio facsimile).

The Central Forecast Office in the U.K. is also located at Bracknell. There the visiting Canadians discovered that the UKMO is the only national weather service with an operational second generation vector computer, the CDC 205. Indeed the British claim to have three times as much computing power as all other national services *combined!*

However, Fichaud and Allard found that the UKMO was far behind AES in communications, being in the process of switching from an archaic teletype relay-type system to a computer controlled system, much like what AES had 15 years ago.

The Central Office is much like our CMC, producing and sending forecast products and guidance to eight weather centres in the U.K. However, two of those centres — Heathrow, which supports civilian aviation and High Wycombe, which serves military aviation — forecast independently of Bracknell. They are not required to follow guidance that they receive from the Central Forecast Office and in practice often deviate from it. The other weather centres appear to operate more or less as AES WO4s do, being absolutely bound to follow guidance from Bracknell.

The Heathrow Weather Centre is the principal aviation forecast office for civilian users. By AES standards their staff allocation — 100 PYs on shift, of which 38 are professionals — is extremely generous for the workload — 12 TAFS (terminal forecasts), 14 local area forecasts, significant weather charts and written route forecasts as required. They do not prepare area forecasts, instead they provide significant weather charts.

The London Weather Centre, on the other hand, deals with everything but aviation and is quite subordinate to Bracknell's Central Forecast Office. Their workload consists mainly of packaging and tailoring of information and disseminating it to the users, including live scheduled broadcasts on radio & TV. They are a large sophisticated presentation office with a staff of 86. An entire section of the Centre, the offshore bench, is devoted to preparing site-specific forecasts for about 90 from offshore rigs and platforms in the North Sea, off Scandanavia, and in the Mediterranean. Revenues from this activity alone reached $2.4M last year.

Overall Fichaud and Allard found that the UKMO was run more like a commercial venture than a public service organization. Their scientists and managers impressed the Canadians as did their facilities. Their central computer installation was far superior to AES's, but AES is well ahead in the acquisition and use of mini computers at weather offices, and the operational use of weather radar data and in all communications.

Fichaud said he was impressed and somewhat envious of the very generous — by AES standards — operational staff allowance of the weather centres, which are responsible for an area 1/40 the size of Canada.

France does quality research

The tour of the Météorologie Nationale de France (MNF) began with a visit to the Headquarters, just outside of Paris. The overall budget of the MNF is $92.6 million with almost 3500 staff and an additional 800 providing meteorological services for the military. As with the UKMO, Mr. Fichaud found these resources quite generous, relative to the AES.

The MNF has six regions but, at present, each region has little real power or autonomy. A striking feature of the organization was the widespread decentralization of the research component into six different areas of the country. This is part of an on-going program to decentralize which will hopefully permit development of the Regions and improve user assistance.

The five-day tour of the MNF included visits to the Metropolitan Meteorological Service in Paris, the main forecast centre for France, the Meteorological Satellite Centre, situated in Brittany, the Technical and Material Centre at Trappes near Versailles, the Atmospheric Studies and Research Centre at Mayny-les-Haneaux near Paris, and the Aviation Forecast Centre at Orly Airport. Throughout the visit, Mr. Fichaud was impressed with all the facilities, the quality of research in meteorology in space and the high level of automation in data acquisition systems (surface, U/A, radar buoys). The French are also pushing vigourously for dissemination systems like automatic telephone answering devices, videotex etc. On the other hand, their communications system seems weak, relative to AES's and even the UKMO, their major computer hardware is about one generation behind that of other national weather services and they do not yet use mini computers in the Regional Weather Centres. In addition, Mr. Fichaud found the MNF's use of radar and satellite imagery was well behind ours.

One particularly attractive feature of the MNF, at least in Mr. Fichaud's view, was the fact that all Directors of services and establishments had private use of a chauffeur-driven government vehicle, even outside of working hours. He expects, however, that it will be some time before such perks are available to AES senior staff.

In all, Mr. Fichaud and Allard spent 9 days in Europe. They were joined for the UKMO and ECMWF parts of their visit by Pat Pender and Carol Klaponski, two members of AES's Forecast System Review Revision Task Force.

The tour generated a useful exchange of information and ideas and established some good contacts, indeed the first such interface for AES with the MNF.

Three AES visitors are seen visiting the European Centre for Medium-Range Weather Forecasts at Reading, England. They are, left to right: Pat Pender, Ray Fichaud and Carol Kaplonski.

The business of AES

by Don Smith

At the AES Directors' Meeting in May of 1982, Mr. Jim Bruce, the Assistant Deputy Minister asked those present to give some thought to a short definition of AES's business.

After considerable discussion, the AES Management Committee expressed a preference for the following statement:

"AES's business is to ensure that Canada has the information it needs on atmospheric conditions and their effects."

Obviously, this statement includes reporting on past, present and future weather and climate. However, it goes much farther than these traditional activities in three ways.

First, the statement does not require that AES provide all the information itself. We have a responsibility to identify shortfalls in the atmospheric information that Canadians need for economic, safety and security, environmental quality, or whatever reasons. Then we should question whether the costs of correcting the shortfall should be charged, in full or in part, to the taxpayer or private industry. We should determine whether the work can best be done within AES or by someone else.

In cases where we should not do all the work ourselves, we may still have a responsibility to promote appropriate activities elsewhere, or perhaps to co-operate in or co-ordinate activities in the universities, private Canadian meteorological agencies or the provinces.

This promotion and co-ordination may also be at the international level where there is clearly a benefit to Canada. At all stages, a variety of government policies and priorities may influence the recommendations we develop as we seek approval from Cabinet for a course of action. The key point is that AES has a responsibility to overview national needs, but it cannot itself undertake to satisfy all of the demands for information.

The second sense in which the statement goes beyond weather and climate information is in the generality of "atmospheric conditions and their effects." Ice conditions, sea-state, the hydrologic cycle, weather influences on food and fibre production, and many other long-standing involvements are obviously still part of our business. So is the newer involvement in air quality.

Canada needs information on the chemical composition of the atmosphere, past, present and future. We can be proud of what AES has achieved in this field, and in a relatively short time. Societal issues such as the long range transport of pollutants, acid rain, the ozone layer, and the possible influences on climate of carbon dioxide and other gases, are being effectively addressed by AES, both through our own research and monitoring and through promoting and co-ordinating work elsewhere.

Finally, the statement puts some of the things we do in a broader framework. Forecasting, climate studies and records, research, meteorological applications, met. instruments, observing, planning, controlling, the things we do as individuals day by day and the functional units to which many of us belong, exist not because of the intrinsic value of the function (real as that may be) but because of the contribution to ensuring that the country has access to the appropriate information about the atmosphere and its effects.

In summary, the responsibilities of AES are much broader than they used to be. This leads to choices and to debates about the right courses to follow. It also creates opportunities to be more influential in the life of the nation. The statement of what business we are in, and an understanding of the implications of the statement, will I am helpful, help us to rise to the challenge.

Mr. Smith is director general, Field Services Directorate.

Zooming in on the Quebec Forecast Centre

by Denis Poupart

In 1927, the federal Department of Marine and Fisheries established the first Quebec meteorological services office in Saint-Hubert, (about 20 km south east of Montreal), primarily to meet the needs of an airline that had flights between Montreal and Albany, N.Y. The importance of these services was underscored by the visit of the famous R-100 dirigible to Montreal in 1930 and they survived the economic depression of the 1930s.

At that time weather forecasts were prepared in Toronto and presented in Quebec. It was not until 1937-38, a short time after the establishment of Trans-Canada Airlines (now called Air Canada), that a team of experts began forecasting the weather at Saint-Hubert airport. At the same time, responsibility for meteorological services was transferred to the Department of Transportation.

During the Second World War, weather conditions were considered a military secret and the general public was no longer given meteorological in-

formation. The weather office was moved during the War to Dorval (Montreal International Airport.) In 1946, Canadian meteorological services were reorganized and divided into six main regions. The district aviation forecast office and the Dominion public forecast office — both of which were located in Dorval — were given responsibility for providing meteorological services throughout Quebec. The two offices were brought together in 1960 to form the Montreal Weather Office.

In 1976, five years after Canadian weather offices became part of the Atmospheric Environment Service of Environment Canada, the Weather Office was moved to new premises in the city of Saint-Laurent and became the Quebec Forecast Centre (QFC).

Forecasting at the QFC

Before a meteorologist can determine precisely what the weather will be like, he must carry out a painstaking analysis of the atmosphere. He must examine all the meteorological observations which have some bearing on the region for which he is responsible and select the information that will enable him to predict the development of atmospheric conditions.

First, the meteorological analyses pressure fields (isobaric analysis) and air masses (frontal analysis) from surface weather observations that have been plotted on a chart. As these analyses are carried out every six hours, he can determine the recent movement of depressions and anticyclones and the accompanying movement of air masses.

Then, using the upper-air soundings that are taken twice a day — at 12:00 and 0:00 UT (Greenwich Mean Time) — he constructs upper-air charts which enable him to make observations about the vertical profile of anticyclones and depressions. He can also determine cloud thickness, the stability of the air and vertical wind shear.

By examining upper-air and surface charts, meteorologists are able to obtain a three-dimensional view of wind, temperature and humidity distribution in the atmosphere.

Development in meteorological satellite technology have made it possible to study cloud masses in the visible spectrum during the day and using infrared cameras at night. Examination of satellite photographs makes it possible to track cloud movements hour by hour and supplement surface weather observations.

The meteorological radar facilities located near Ottawa and Quebec City and on Montreal Island have a range of 360 kilometers and are used to make observations about rainfall for the whole of the upper Saint Lawrence. The radar is also used for monitoring the development of thunderstorm cells which are a possible cause of severe weather conditions.

Predictive analysis

Gathering information through meteorological observations and atmospheric analysis is worthwhile only if the information is used to make predictions. A meteorologist does not only attempt to determine the reasons for current weather conditions; he tries to predict what the weather will be like. The purpose of his analysis is therefore to determine the factors that affect the development of weather systems.

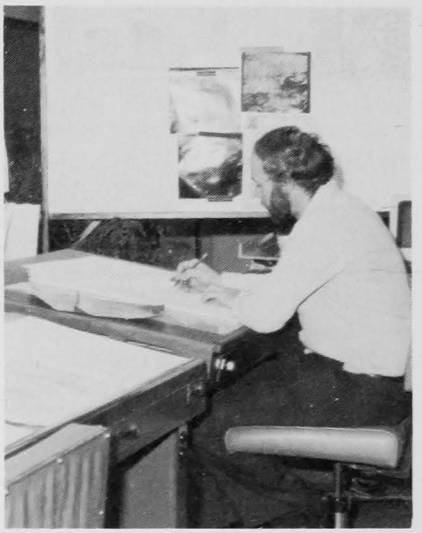
He notes certain contrasts in temperature, the direction of jet streams and any marked instability of air masses. These are the factors that cause the deepening of a depression and influence its future direction, as well as the uplift or subsidence of air in the atmosphere that is responsible for cloud formation and dissipation.

After the meteorologist has identified the factors influencing the development of the weather, he makes a preliminary prediction about future changes in the atmosphere.

Weather simulation

Through current computer technology, the meteorologist has access to weather simulation models which express in quantitative terms the development factors that he identified in his predictive analysis. The models include surface and upper-air observations and data derived from satellite photographs, and they simulate atmospheric conditions up to ninety-six hours ahead. The big computer which produces the weather simulation models is located at the Canadian Meteorological Centre, near the Trans Canada Highway, Dorval.

These models represent a major scientific and technical breakthrough but they still have limitations. Differences between the simulation and actual weather conditions result from approx-



Flanked by maps, charts and electronic equipment, Quebec Forecast Centre meteorologist Henri Woronko prepares the forecast.

imations used in the model and only a limited number of meteorological observations — which provide base data for the models — can be made over a given area. For these reasons, the basic information used in constructing the model only approximates the actual situation. Therefore, a forecast made for an extended period of time is usually less reliable than a short-range forecast. The models available to the meteorologist are generally accurate but in some cases the simulation is very difficult from actual weather developments.

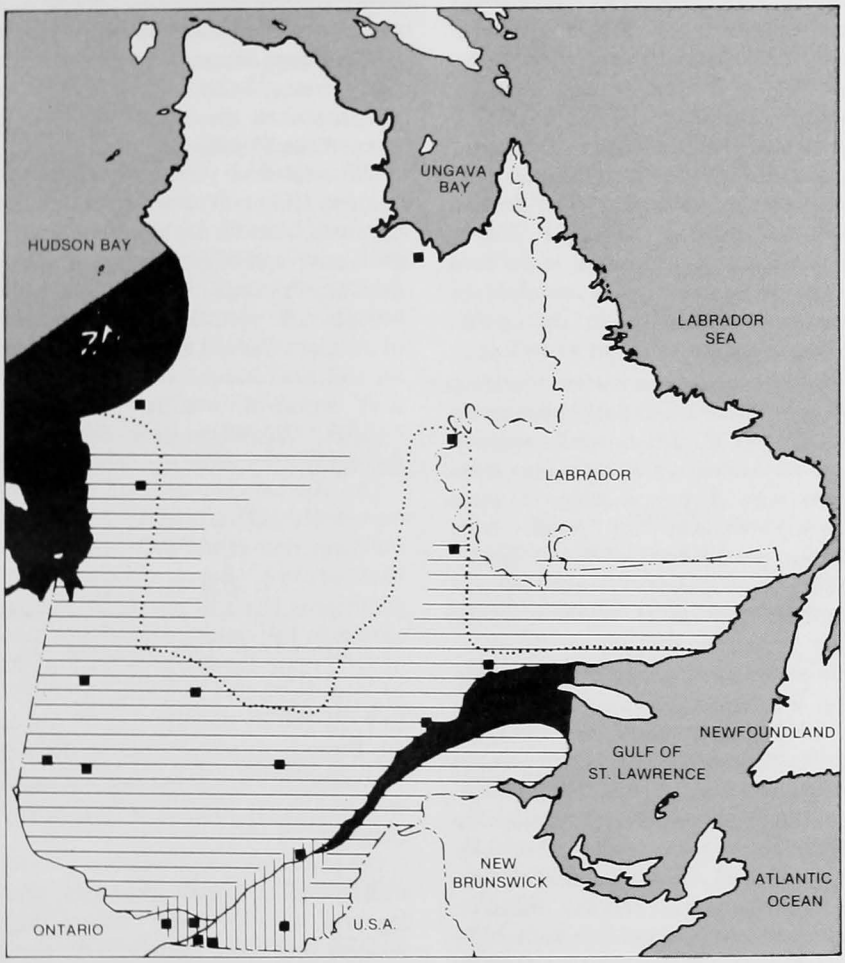
Using his analysis and his knowledge of the strengths and weaknesses of the models, the meteorologist decides which of the possible weather developments are the most likely. If necessary, he makes adjustments to the velocity of depressions and anticyclones and the rate and extent of their development. Finally, he compares frontal structures and their cloud cover. Once he has made all the necessary adjustments, he draws up the prognostic weather chart.

Various types of forecasts

The meteorologist must then adapt his forecast to suit the needs of the various clients of weather forecast services.

For example, aviation forecasts give ceiling height, visibility, type of precipitation, and wind speed and direction. In-flight weather services provide information about the horizontal and vertical extent of the cloud layer and

Areas Covered by Quebec Forecast Centre Services



Denis Labonte

total areas of icing and turbulence.

Marine forecasts predict conditions that may reduce visibility, such as snow, rain and fog, and wind speed and direction. Particular attention is paid to severe weather conditions, such as thunderstorms in the summer and freezing spray in the winter. During the summer, the same conditions are predicted for pleasure boaters on the Lake of Two Mountains, and Lake Saint Louis near Montreal and Lake Saint John north of Chicoutimi.

Agricultural forecasts include aridity indexes, the probability of precipitation and cumulative degree-day indexes.

A team specializing in both meteorology and forestry determines cumulative indexes of forest aridity to be used in preventing forest fires. The team concentrates on predicting humidity, the amount of precipitation, lightning (a cause of forest fires) and wind speed in order to assist fire fighters.

In winter, predictions about snowfall are made for a number of municipalities to make it easier for them to manage the personnel and equipment needed for snow removal.

Finally, everyone has often read and heard public weather forecasts. These include weather watches or storm warnings issued when severe weather conditions are predicted.

Changing needs

Technology is changing, and so are the needs of the clients of weather services. In order to keep pace with those developments, a part of the work is devoted to improving forecasting techniques to meet new needs. For example, the QFC works with the federal and provincial departments of Agriculture in conducting applied research into potato blight, the growth cycle of the European corn borer, protection of apple trees and so on.

In conjunction with the Quebec Department of Natural Resources and conservation societies, the Centre provides meteorological training for forestry staff. In addition, it takes part in applied research on the effect of the weather on the growth cycle of the spruce budworm and serial spraying of insecticides.

The challenge facing the team

Analysis, decision making and writing weather reports entails a considerable amount of work that must be performed by meteorologists twenty-four hours a day. The teams of meteorologists are assisted by teams of meteorological technicians, communicators for transmitting information and computer programmers for data processing. The goal of all their efforts is the same: to meet the challenge of forecasting ever-changing atmospheric conditions.

The atmosphere is constantly disturbed by the combined action of the sun and rotation of the earth. It is always trying to reach a state of equilibrium, which can be achieved only by forming depressions, hurricanes and tornadoes. We are surrounded by a constantly turbulent fluid that bears no resemblance to laboratory testing conditions. Understanding and predicting changes in the weather is therefore a very difficult task. Even though we can hope to quantify more accurately the mechanisms governing atmospheric conditions and to make more reliable forecasts, there will always be situations when the weather is unpredictable.

Article adapted from the DOE magazine Milieu.

FEATURES

1982 was cold and wet

According to records of the Canadian Climate Centre of Environment Canada 1982 was overall a cold year; temperatures were below normal in virtually all of the country. It was also a dull year, with more of the country wet than dry.

The year was not all gloomy, however. Ample amounts of rain and sunshine contributed to record grain production on the Prairies and bountiful fruit and vegetable harvests in Ontario, Quebec and the Maritimes. An end of year mild spell in Eastern Canada lessened the demand for heating fuels and delayed the inevitable start of winter.

Some of the more significant weather events recorded in 1982 were:

Much of Canada experienced its severest winter in many years. Record low temperatures were set in many localities. The space heating requirements in most population centres in British Columbia, Alberta and eastern Canada were four to eight percent above normal. Weekends in January were particularly cold and stormy in southern Ontario and Quebec and in the Maritimes.

In February, a series of intense storms lashed the Maritimes with strong winds, snow and freezing rain. On February 14 and 15 a storm battered the Atlantic provinces with winds in excess of 100 km/h and high seas above 20 metres. During this storm, the world's largest oil rig, the Ocean Ranger, sank with a loss of 84 lives. Another storm which struck on February 21 and 22 caused near-zero visibility and deep snowdrifts and isolated parts of Prince Edward Island for almost a week.

In mid-April, heavy rains and fast-melting snow spelled disaster to the Eastern Townships and the Beauce region of Quebec. Flooding in the area was the worst in 42 years, and in Sherbrooke alone damage to the central business area ran to about $4 million.

A late spring snowstorm battered southern Alberta and Saskatchewan on May 29 and 30. Strong winds whipped up to 60 centimetres of snow into drifts which were 2 metres deep in some places. Thousands of people were without power for up to 12 hours. Several highways were blocked, campers stranded, and many newborn calves died.

June brought record high temperatures and hours of sunshine in north-central British Columbia and the driest June in 20 years was reported in areas of Alberta and Saskatchewan. By contrast, in the east June was the wettest since the 1960's and the coldest ever in some locations. Overall, southern Ontario experienced its coldest summer, based on temperatures averaged over June, July and August, since 1929. Toronto's highest temperature in the summer was 30°C, the lowest maximum value in a century. The Holland Marsh vegetable growing area of southern Ontario was hit by a severe hailstorm on June 22. The estimated loss to vegetable crops was about $2 to $3 million.

On July 1 a severe thunderstorm dumped 63.5 millimetres of rain in less than one hour on Lethbridge, Alberta, causing several million dollars worth of damage to crops in the area. July brought near normal temperatures to all of southern Canada although there were no real heat waves. July provided the best vacation weather in eastern Canada. August was again cooler than average over most of the country.

On August 14, baseball-sized hail caused $10 million damage to vehicles, buildings and crops in Prince Albert, Saskatchewan. Some of the earliest widespread frosts in several decades occurred in the eastern agricultural areas of the Prairie Provinces on the morning of August 27 and in southern Ontario and Quebec on the morning of August 29. Damage to cereal crops in the west and tobacco crops in the east was extensive and losses totalled several million dollars.

Unseasonably mild weather covered eastern Canada in early December, causing tree buds to swell. Record high temperatures were recorded at many localities including Hamilton where the mercury soared to 22.5°C!

WOMEN ON THE MOVE

Nancy Cutler

The credo "Behind every successful man there's a woman" is due for redefinition. For women like Nancy Cutler, currently of the Career Assignment Program (CAP), success in her career has received the support of her husband Tom who also works at AES Downsview. In the eighties, more couples are working on their *individual* careers, creating a constant need to re-evaluate and co-ordinate both their career and relationship goals.

The Cutlers are well aware of the commitment it takes to keep their lives in harmony. As one of the two DOE people under the CAP in 1980, Mrs. Cutler had to undergo extensive and arduous testing for three days in Ottawa. She was subjected to simulations in office procedures and psychological testing. Placed in an office, she had to assume the role of acting Director General of a fictitious organization and deal with paperwork, meet with division chiefs, discover the organization's problems and present a brief on them to the president of the agency. Mrs. Cutler also had simulated meetings with Treasury Board and a task force to review the agency's and branch's problems.

CAP testing is aimed at putting a senior management hopeful under a great deal of stress to measure their aptitude for handling an executive role. After successfully making it through the testing, Mrs. Cutler was assigned to take

STAFF CHANGES

three months of training at the Public Service Training Centre near Touraine, P.Q. CAP provides constant counselling throughout the possible five year period it may take for a trainee to graduate to an executive position and provides assistance in locating work assignments of six months to two years duration. Mrs. Cutler's first CAP assignment was with the Regional Director General's office in Quebec City where she was a program officer for the Toxic Chemical Management Program (TCMP). There she handled the duties of the Regional Coordinator for the TCMP. Her responsibilities included providing background papers for the committee, acting as Regional Coordinator committee secretary and proposing alternatives in creating the blueprint for the Toxic Chemicals Management Program in the Quebec region.

Mrs. Cutler has now been assigned to AES to manage the activities of the Office of the Director General of Field Services (AFDH), reporting directly to Don Smith.

That is quite a move from her first position in 1968 as a forecaster in the Vancouver Weather Office. Her last position before going on CAP was with the Program Development and Evaluation Branch recommending on allocations, preparing program forecasts and co-ordinating several AES programs. She is the second AES woman to take management training. Mrs. Cutler has also been very active with the Meteorological Group of the Professional Institute.

For now the Cutlers are in their home near Downsview, but when Mrs. Cutler's next CAP assignment comes up in less than six months they may have to sit down and once again rearrange their lives.

STAFF CHANGES

Promotions/ Appointments

J.D. Abraham (MT-5) Meteorologist, CMQ, St-Laurent, P.Q.
V.P. Barnes (CR-3) Clerk, ACPN, Downsview, Ont.
R. Bigio (MT-5) Meteorologist, METOC, Halifax, N.S.
M. Boulay (EG-1) Met. Tech. WO4, Resolute, N.W.T.
F.R. Bowkett (MT-8) Meteorologist, AFDG, Downsview, Ont.
P. Cadieux (CS-2) Computer Systems Analyst, ARMN, Montreal, P.Q.
G. Chartier (EG-7) Supervisor, WO4, Dorval, P.Q.
D.K. Clark (MT-5) Meteorologist, CFFC, Trenton, Ont.
R.J. Daigle (MT-5) Meteorologist, METOC, Halifax, N.S.
T.A. Danks (MT-5) Meteorologist, METOC, Halifax, N.S.
K.A. Devine (MT-6) Meteorologist Project, ACSN, Downsview, Ont.
M. Donoghue (EG-5) Pres. Tech. WO4, Banff, Alta.
R.L. Drouillard (MT-5) Meteorologist, CFFC, Trenton, Ont.
J.M. Dumont (AS-2) Admin. Officer QAEA, St-Laurent, P.Q.
M. Falardeau (CS-2) Computer Systems Analyst, ARMS, Downsview, Ont.
R. Frenette (EG-1) Met. Tech. WO4, Resolute, N.W.T.
J.N. Gagnon (EG-7) Specialist Instructor, ACTA, Cornwall, Ont.
E. Goldberg (MT-5) Meteorologist, ARMS, Downsview, Ont.
B.C. Green (MT-6) Meteorologist, AFON, Downsview, Ont.
S. Halliday (CS-2) Computer Systems Analyst, ARMS, Downsview, Ont.
C.A. Hayes (SCY-3) Secretary, AFSD, Downsview, Ont.
J. Hebert (EG-1) Met. Tech. WO4, Resolute, N.W.T.
R.V. Horne (MT-5) Meteorologist, METOC, Halifax, N.S.
M. Kallaur (CS-5) Chief, ACPC, Downsview, Ont.
J.P. Kelley (MT-5) Meteorologist, METOC, Halifax, N.S.
K.H. Kirkwood (MT-5) Meteorologist, METOC, Halifax, N.S.
J. Kivisto (EG-6) WSM, WS1, The Pas, Man.
A.D. Kodz (EG-5) Pres. Tech. WO4, Inuvik, N.W.T.
B. Kunzelman (MT-3) Meteorologist, PRWC, Winnipeg, Man.
F. La Rouche (EG-1) Met. Tech. WS4, Island Lake, Man.
R. Lee (EG-6) Pres. Tech WO3, Regina, Sask.
W. Lumsden (MT-6) Meteorologist, OIC, CFFC, Halifax, N.S.
C. Masse (MT-3) Meteorologist, CMQ, St-Laurent, P.Q.
T.E. McLean (EG-4) Radar Wx Obs. WS4, Broadview, Sask.
R.J. McLeod (EG-6) Pres. Tech. WO3, Saskatoon, Sask.
C.S. McNair (MT-5) Meteorologist, CFFC, Trenton, Ont.
S. Milburn (PC-1) Physical Scientist, LLO, Downsview, Ont.
J. Millar (EG-7) OIC, WO4, Resolute, N.W.T.
A.S. Mohamed (FI-1) Fin. Officer, PAEAF, Vancouver, B.C.
G. Myers (EG-4) OIC, PAEOS, Lytton, B.C.
H. Pearce (EG-6) Special Programs Off. Dewline, Cambridge Bay, N.W.T.
J.P. Renaud (EG-7) Specialist Instructor, ACTA, Cornwall, Ont.
M. Riley (EG-6) Surface Met. Standards PAEOI, Vancouver, B.C.
N. Rollinson (EG-5) Pres. Tech. WO1, Whitehorse, Y.T.
W. Romanko (GL-VHE-9) Station Mechanic, WS1, Sachs Harbour, N.W.T.
R. Santo (EG-8) Comm. Off. WAED, Edmonton, Alta.
K. Sawyer (CS-1) Computer Systems Analyst, WO1, Edmonton, Alta.
D.E. Shears (OCE-2) Word Processor Op. ACPD, Downsview, Ont.
D.R. Smith (MT-5) Meteorologist, CFFC, Trenton, Ont.
A. Smith (EG-6) Inst. Tech. ACSS, Downsview, Ont.
M. Suzaki (CR-4) Clerk, PAEAF, Vancouver, B.C.
S.L. Thompson (EG-5) Ice Tech. ACIF, Ottawa, Ont.
S. Tsang (CS-4) Project Manager, ACPB, Downsview, Ont.
R. Vinluan (DD-4) Draftsman, ACSS, Downsview, Ont.
D. Watson (EG-7) Met. Inst. Spec. PAEOI, Vancouver, B.C.
C.J. Wendell (MT-5) Meteorologist, CFFC, Trenton, Ont.
Q. Wensveen (EG-6) OIC, WO4, Edmonton Municipal Airport, Alta.

STAFF CHANGES

E.L. Whyte (FI-2) Fin. Officer, AAFA, Downsview, Ont.
F. Yates (CS-3) Project Manager — Applications, ACPP, Downsview, Ont.
D.J. Yip (MT-5) Meteorologist, CFFC, Trenton, Ont.

Transfers

T. Agnew (PC-3) Physical Scientist, CCAH, Downsview, Ont.
R. Bédard (EG-1) Surface Obser. QAEO, Cape Dyer, P.Q.
M. Bergeron (EG-2) Surface Obser. QAEO, Mirabel, P.Q.
A.L. Borm (FI-2) Fin. Officer, PAEAF, Vancouver, B.C.
J. Burrows (EG-1) Weather Obs. PAEOO, Lytton, B.C.
C. Clements (CS-2) Analyst/Programmer, CFFC, Edmonton, Alta.
S. Collins (EG-5) Pres. Tech. WO3, Yellowknife, N.W.T.
A. Fergusson (MT-5) Meteorologist, CFFC, Edmonton, Alta.
K. Freeman (EG-6) Pres. Tech. WO4, Halifax, N.S.
D. Fulcher (EG-2) Met. Tech. PAEOO, Vancouver Harbour, B.C.
J. How (EG-1) Weather Obs. PAEOO, Cape St. James, B.C.
J.P. Lacroix (EG-7) Recruitment Officer, AFDH, Downsview, Ont.
M. Lessard (EG-6) Inspector, QAEOI, TCTI, Cornwall, Ont.
K. Lloyd-Walters (EG-4) Aero. Tech. WAED, Edmonton, Alta.
J. Mayo (EG-4) Aero. Tech. WAED, Edmonton, Alta.
D. McLarty (EG-6) Pres. Tech. WO4, Edmonton Int'l. Airport, Alta.
C. McMullen (EG-6) Pres. Tech. WO4, Sydney, N.S.
R. Melick (EG-6) Pres. Tech. WO4, Edmonton Int'l. Airport, Alta.
W. Miller (EG-3) Aero. Tech. WS2, Stony Plain, Alta.
R. Nault (EG-3) Met. Tech. WO4, Calgary, Alta.
T. O'Connor (OCE-2) Word Processor Op. ACTS, Downsview, Ont.
J.L. Paré (EG-3) Aero. Tech. WS1, Maniwaki, P.Q.
D. Polutnik (EG-5) Pres. Tech. WO4, Inuvik, N.W.T.
H.P. Schmidt (MT-5) Meteorologist, CFFC, Trenton, Ont.
D. Soucy (MT-6) Meteorologist, CMQ, St-Laurent, P.Q.
J.R. Thibault (EG-2) Surface Obser. QAEO, Baie Comeau, P.Q.

Temporary or Acting Positions

M. Adamson (EG-5) Pres. Tech. WO4, Churchill, Man.
C.B. Adamson (MT-8) Meteorologist, Chief, APEC, Downsview, Ont.
D.B. Bentley(MT-4) Meteorologist, CFFC, Edmonton, Alta.
N.B. Cutler (MT-6) Meteorologist, AFDH, Downsview, Ont.
D. Davies (AS-2) Admin. Officer, AABD, Downsview, Ont.
P. Dillistone (MT-6) Meteorologist, OIC, CFFC, Trenton, Ont.
P. Dubreuil (MT-6) Meteorologist, MOP, APEC, Downsview, Ont.
E. Elliotson (AS-5) Chief, AAG, Downsview, Ont.
B. Fehr (EG-6) Radar Specialist, WO4, Winnipeg, Man.
D. Grant (AS-4) Project Manager, ACPB, Downsview, Ont.
B. Grogan (SCY-2) Secretary, ACPC, Downsview, Ont.
R.A. Howell (MT-5) Meteorologist, Chief Instructor, CFS Met. Winnipeg, Man.
O. Koren (MT-6) Meteorologist, Project AFSD, Downsview, Ont.
E.S. Kuntz (SCY-2) Secretary, WO3, Regina, Sask.
K. Lagaré (EG-5) Pres. Tech. WO4, St-Hubert, P.Q.
R. Laurence (MT-6) Meteorologist, MOP, APDG, Ottawa, Ont.
S. Lupack (AS-3) Admin. Officer, ACTS, Downsview, Ont.
A. Malinauskas (AS-7) Evaluation Officer, APEC, Downsview, Ont.
J.B. Martin (AS-2) Admin. Officer, AFDH, Downsview, Ont.
R. Ouimet (EG-5) Pres. Tech. QAEW, Dorval, P.Q.
M. Pleau (EG-6) Instructor, TCTI, Cornwall, Ont.
J. Richard (EG-5) Pres. Tech. QAEW, Mirabel, P.Q.
M. Rossetti-Longarini (CR-3) Clerk, AAFA, Downsview, Ont.
D. Sheppard (CS-2) Computer Systems Prog. ACSL/M, Downsview, Ont.
E. Sheehy (AS-3) Admin. Officer, ACPE, Downsview, Ont.
J.D. Steenbergen (REM-1) Research Manager, ARDS, Downsview, Ont.
R. Walls (EG-6) Wx. Svc. Tech. PRWC, Winnipeg, Man.
G. Zanolini (SCY-4) Secretary, ADMA, Ottawa, Ont.

Departures

L. Baker, WS3, Lytton, B.C.
C. Bentley, Chief, AAG, Downsview, Ont.
S. Clark, WS3, Slave Lake, Alta. to Toronto Fire Dept.
A. Farhang, ACET, Downsview, Ont.
J. Letual, WO1, Edmonton, Alta.
G. Mainprize, WAED, Edmonton, Alta.
L. Mann, Saskatoon, Sask.
B. MacDonald, Arctic Op. Mould Bay, N.W.T.
T. Tymn, Resolute Bay, N.W.T.

Leave of Absence

K.B. Armstrong, AFDH, Downsview, Ont., French Language Training.
L.A. Barrie, ARQT, Downsview, Ont., Development Leave, Sweden.
H. Bohemier, Weather Services, Winnipeg, Man.
H. Higgs, CFWO Comox, B.C.
J.W. Perron, TCTI, Cornwall, Ont. to St. Lawrence College
M. Phillips, ARQT, Downsview, Ont., Development Leave, Australia.
R. Price (EG-6) Pres. Tech. Moncton, N.B., French Language Training.

Retirements

J. Deschenes, ACSS, Downsview, Ont. December 1982.
Y. Downie, WO1, Edmonton, Alta. December 1982
W. Krause, WO1, Whitehorse, Y.T. December 1982
E. McDonagh, Scientific Services, Winnipeg, Man. October 1982.
M. Skinner, Chief Librarian, AAL, Downsview, Ont. November 1982.
J. Storey, WO1, Whitehorse, Y.T. December 1982
M. Tusiewicz, ARMS, Downsview, Ont. December 1982.

Deaths

G. Chapleau, QAES, St-Laurent, P.Q. November 1982
F. Rozon, CMQ, St-Laurent, P.Q. November 1982
D. Sumanik, Whitehorse, Y.T. December 1982