



ZEPHYR

MARCH 1973 MARS

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L'UQAM DEVIENDRA UN CENTRE D'EXCELLENCE EN MÉTÉOROLOGIE

A l'occasion de la journée mondiale de la météorologie en l'année du Centenaire de la création de l'Organisation météorologique mondiale, le département de physique de l'Université du Québec à Montréal annonçait officiellement l'ouverture de deux programmes en météorologie.

M. Armel Boutard, directeur du département de physique, a déclaré lors d'une conférence de presse en présence du ministre de l'Environnement, M. Victor Goldbloom, de MM. Jean Lupien et J.R.H. Noble, sous-ministres fédéraux de l'Environnement, et de nombreux invités, que l'initiative de l'UQAM établit maintenant cette Université comme le seul centre francophone de formation complète en météorologie au Canada.

Un des programmes s'adresse à des candidats sélectionnés par le service fédéral de l'environnement, qui possèdent déjà un baccalauréat en sciences ou un diplôme de génie dans le domaine de la physique.

Le Service de l'environnement atmosphérique du ministère fédéral de l'Environnement, par sa décision de confier au département de physique de l'UQAM la formation de son personnel francophone, permet le développement de programmes complémentaires qui feront de l'Université du Québec un centre d'excellence en météorologie et en environnement.

Un des résultats immédiat de cette collaboration entre le Service fédéral et le département de physique a permis, avec l'autorisation de la Commission des études de l'UQAM, l'ouverture au module physique d'un programme de 1er cycle en météorologique conduisant au diplôme de baccalauréat spécialisé en science, option physique-météorologie.

Ce programme sera principalement axé vers les besoins québécois et débouchera en partie sur une nouvelle maîtrise qui sera annoncée bientôt.

Les deux programmes actuels en météorologie permettront l'engagement de spécialistes dont la tâche sera d'établir progressivement un programme de 2ème et de 3ème cycle (doctorat) en météorologie.

Les axes de recherches de ce domaine seront déterminés après consultation avec tous les organismes concernés au Québec, ce qui implique la collaboration du département de physique de l'UQAM avec les Services fédéraux et provinciaux, les différentes constituantes de l'Université du Québec et le département de météorologie de l'Université McGill.



De gauche à droite: MM. Maurice Brossard, vice-recteur à l'enseignement et à la recherche à l'Université du Québec à Montréal; J.R.H. Noble, sous-ministre adjoint, ministère de l'environnement du gouvernement fédéral; Victor Goldbloom, ministre de l'environnement du gouvernement provincial; M. Maurice Boisvert, vice-président à l'enseignement, Université du Québec à Québec.

Liste des Invitées

Gouvernement Fédéral Ministère de l'Environnement

- Monsieur Jean Lupien
Sous-ministre senior
- Monsieur J.R.H. Noble
Sous-ministre adjoint
- Monsieur L.T. Campbell
Directeur
de l'administration
- Monsieur C.M. Penner
Directeur
Direction de la formation
du personnel
- Monsieur Raymond J. Fichaud
Directeur régional
Région du Québec
- Monsieur J.M. Leaver
Directeur
Centre météorologique canadien
- Monsieur André J. Robert
Directeur
Division de la recherche en
révision numérique
- Monsieur François Lemire
Chef de Service
Bureau météorologique de
Montréal

Gouvernement Provincial

- Monsieur Victor Goldbloom
Ministre de l'environnement
- Monsieur Raymond Périer
Directeur
Services hydrométéorologiques

**Université McGill
Département de Météorologie**

- Monsieur Svenn Orvig
Directeur

Université du Québec

- Monsieur Maurice Boisvert
Vice-président à
l'enseignement
- Monsieur Louis Berlinguet
Vice-président à
la recherche

Université du Québec à Montréal

- Monsieur Léo Dorais
Recteur
- Monsieur Gilles Bolduc
Vice-doyen du
Secteur Sciences
- Monsieur Maurice Brossard
Vice-recteur à
l'enseignement et à la
recherche
- Monsieur Conrad East
Directeur
Centre de recherche
écologique
- Maître Lise Langlois
Secrétaire générale
- Monsieur Florent Verreault
Directeur du
Module de physique
- Monsieur Marc Bélanger
Doyen à la recherche
- Messieurs les professeurs
du département de physique
U.Q.A.M.
- Monsieur Guy Goulet
Adjoint au Doyen à la
Gestion académique
- Monsieur André Grou
Doyen du premier cycle
- Monsieur Mauro Malservisi
Doyen à la
Gestion académique

CANADA OBSERVES WORLD METEOROLOGICAL DAY

On Friday, March 23, Canada together with over 130 member nations of the World Meteorological Organization, celebrated the thirteenth World Meteorological Day. This year's observance highlighted "One Hundred Years of International Co-operation in Meteorology."

Evidence of man's dependence on the weather can be traced back to the ancient Egyptians whose awareness of the seasonal flooding of the Nile was the basis of their civilization and to the deities of early religions whose powers were considered to include the control and modification of weather.

The study of atmospheric environment in the western world goes back to the fourth century B.C., and Aristotle's *METEOROLOGICA* – which removed this study from the realm of mythology. For two thousand years the work of Aristotle and his pupil Theophrastus remained the definitive study on the subject of weather. It was not until the Renaissance in Italy and northern Europe, the voyages of Columbus and the opening of the sea routes to the Far East that the broad need for information of a meteorological nature was created. The invention of instruments for measuring physical elements, by Galileo, Castelli, Torricelli, and Robert Hooke, enabled another group of Scientists to determine basic physical laws – Boyle – dynamics of the atmosphere, Hadley – trade winds and the earth's rotation, Franklin – atmospheric electricity, Lavoisier and Dalton – nature, condition and composition of the air.

Instrumentation opened the way for networks of observing stations and the beginning of meteorology as a science but the systematic compilations and the first attempts at preparing weather maps were based on observations collected long after the event, far too late for useful forecasts. Then in 1843, Samuel Morse invented the electric telegraph and revolutionized the possibilities for weather forecasting, particularly for storm warnings. The vast expansion of international trade following the Industrial Revolution created the increasing need for ships and hence the need for precise, reliable and regular information about weather and at last the discoveries in pure science, the inventions – the instruments which had been lurking in the corridors of history, could now find ready use.

Increasing interest in meteorological research led to a demand for far-reaching coordination and standardization of methods and procedures – and so began a series of conferences which brought together the world's foremost meteorologists and prepared the way for the First International Meteorological Congress in Vienna in 1873. This was the beginning of the preparatory phase of organized international meteorology which is now embodied in the World Meteorological Organization.

In 1896, Sir Frederic Stupart, Director of the Canadian Meteorological Service, attended meetings of the IMO in Paris. Since that time Canada has participated regularly in international forums dealing with meteorological matters and was one of the founding nations of the World Meteorological Organization. Currently, the Assistant Deputy Minister of the Atmospheric Environment Service, Mr. J.R.H. Noble, is a member of the Executive Committee of the WMO and president of Regional Association IV (North and Central America). Canada has experts serving on all the WMO technical commissions and also provides aid and training assistance to WMO member states in order that they may improve national meteorological observations and service. The object of this program is to help upgrade the global weather facilities for the benefit of all nations. Only by this type of mutual assistance can meteorology progress.



World Meteorological Day at AES Headquarters

Photo Courtesy N. Steinhaur.

FIRE EMERGENCY ALARM SYSTEM – COURTESY SERVICE FOR ATIKOKAN

The Fire Alarm Alerting Service formerly exercised by the Telephone Switchboard Operators has now been taken over by the Surface Weather Station Staff. Authorization for this service has been granted by the Headquarters of the Atmospheric Environment Service following an arrangement with the Township of Atikokan.

A transfer of this service was necessary due to the advancement of direct dial telephone which automatically eliminates telephone switchboard operators. The Weather Station which is in operation 24 hours a day, appeared as a suitable prospect. The Fire Chief contacted the Officer-in-Charge about the probability of having the installation of the fire alarm system at the Weather Station. First of all, following the talk with the Fire Chief and before any official action was taken, a discussion was held with the staff as to this probable additional duty, and each staff member was quite in agreement with undertaking the service.

It was suggested by the Officer-in-Charge to the Fire Chief that a written application for this request be made by the Township of Atikokan, and this, along with a



New Location for Fire Key: Marcel Gillet, head of the local weather bureau, holds fire call phone to demonstrate manner in which such calls now are relayed to members of the volunteer brigade. The weather bureau took over operation of this service recently. Others, 1 to r., Fire Chief Robert Mathison, Councillor Wayne McKay, Chairman of the fire committee, and Reeve S.G. Hancock.

Station memorandum would be forwarded to our Regional Office for scrutiny. Negotiations, and the official processing of Documents, etc., required a certain amount of time before all the condition clauses were clearly agreed on, then we received instructions to proceed with having the Fire Alarm system installed.

The equipment consists of a small table on which there are two light panels, (one with the siren switch attached), and two telephones. One of the telephones receives the emergency calls, and the other which is allied to the panels activates the lights as the power is turned on and each fireman answers, each light has a number for one individual fireman. After the location of the fire is repeated four or five times, the siren is turned on for three short blasts, this is done mostly to alert any of the firemen who may not be at home. All the Firemen at Atikokan are volunteers, (excepting the Fire Chief), so they have other occupations.

The whole alerting procedure requires two or three minutes at the most, and the average emergency calls are five or six per month, according to the Fire Chief. This service does not really interfere with regular duties, and we feel that in doing this service we are contributing our assistance and showing good will for the Community. Since the installation of the Alerting System Equipment on March 23rd, we have received a few Fire Alert calls, and all were handled without any difficulty.

Other staff members at Atikokan involved in providing this service are Messrs. Garth Hugill, Bruce Buchanon, Alan Bell-Chambers and Ray Anderson.

WEATHER SERVICES IN THE SEVENTIES

That was the theme of a three-day meeting held at AES Headquarters February 27 to March 1 bringing together Regional Superintendents of General Weather Services (or those acting in that capacity) and members of the User Requirements Division, Field Services Directorate. Attending were Henry Belhouse, Pacific; Clarence Thompson, Western; Hugh Fraser, Central; Don Ross, Ontario; Francois Lemire, Quebec; George Washburn, Atlantic. Roy Lee chaired the meeting with Bob Dodds, Ted Mahaffy and Keith McGlening taking over during discussions devoted to their respective areas of interest.

A unique feature of the meetings was the distribution of a total of 52 reference documents, most of them made available to the participants in advance of the session. Topics discussed were varied and far-ranging but all emphasized the service aspects of the AES and in particular the interface with the users and the need to meet the users requirements.

The increasing importance of Presentation Weather Offices was a recurring feature and many of the items under discussion were related to improving the capabilities of such offices and in anticipating the expanding role they will play in the provision of routine and specialized weather services.

The AES role in air quality services as described by Dr. M. Kwizak and Dr. R. Treidl provided background information on the use of indices in the provision of

agricultural weather services. Ron Miller, Head of the Information Services Office outlined the present and planned programs in the areas of internal and external information exchange.

While the meeting was not convened to arrive at definitive recommendations the exchange of information among regional representatives and Headquarters staff proved illuminating and follow-up action is expected on a number of the suggestions which evolved from the frank discussions. It is anticipated that similar meetings of RSGW'S will become a regular event.

IN MEMORIAM

The Atlantic Region was shocked and saddened by the sudden death of Reginald Edmund Hody which occurred in Moncton on March 9. He was fifty-two years old. At the time of his death he was the Regional Superintendent of Observational Services. He is survived by his wife, Maud, and three children, Florence, David and William; all of whom live at home in Moncton.

On completion of his service overseas with the Army he attended the University of British Columbia, graduating with his B.A. in 1951. He joined the Meteorological Service in June of that year and on successfully completing the meteorology training course at Toronto and Trenton, he was transferred to the Aviation Forecast Office at Calgary.

After a few months of duty at Calgary, he applied for and won the position of Meteorological Inspector for the then Moncton District and he assumed those duties in May 1952. Thus early in his career he moved into the specialized technical field of Observational Services and he guided the program in the Atlantic Region from a one-man operation to its present level. His duties took him to all parts of the Atlantic Provinces and the successful networks he has established are a tribute to his knowledge and ability. The operations on Sable Island were a matter of particular concern and pride to him. He was well known for his innovative abilities in his chosen field.

Reg Hody will be remembered by his colleagues and all those who worked with him for his strong sense of compassion for others, his willingness to help those less fortunate and for the contributions he made to Meteorological Services in the Atlantic Provinces.

VOLUNTEER OBSERVERS IN ONTARIO AWARDED HONOUR FOR SERVICE TO CLIMATOLOGY

Volunteer Climatological observers in Ontario who, in the pursuit of a hobby, or as part of their work devote some of their time each day to observing the weather for the Atmospheric Environment Service, were recognized, when five of their numbers were selected for awards for their outstanding contribution to the observing program.

The names of those selected to receive the awards which this year consist of desk barometers with suitably inscribed plaques are:

Mr. H. Ellis-Leamington
Mr. R. Burley – Picton
Mr. V. Tuck – Grimsby
Staff, Water Pollution Control – Brantford
Staff, Geco Div. Noranda Mines – Manitouwadge



*Climatological Observer V. Tuck, Grimsby and Meteorological Inspector
R.D. Hall.*



Climatological Observer, R. Burley, Cressy, Ont., and Supervisor of Station Operations, A.T. Mowat.



Climatological Observer, J. Harcourt, Ontario Water Resources Commission, Brantford and Regional Supervisor of Inspection, W. Halina.

DURANT L'HIVER, DEUX JET-STREAM ONT COMPLÈTEMENT DÉROUTÉ LES MÉTÉOROLOGUES

— La Presse —

WASHINGTON (PA) — Deux énormes fleuves d'air se sont égarés, cet hiver, causant des tempêtes de neige dans le Sud, alors qu'il faisait doux et qu'il pleuvait dans le nord des Etats-Unis et au Canada.

Les trajets inhabituels qu'ont suivis le jet-stream polaire et le jet-stream tropical ont déjoué non seulement les plus savants des météorologues mais les ordinateurs utilisés pour . . . mieux prévoir le temps.

Les météorologues blâment habituellement les cabrioles du jet-stream polaire, qui évolue très haut au-dessus des régions les plus au nord de la planète, lorsque le temps se dérègle. L'évolution de ce courant d'air a toujours été un élément majeur dans la préparation des prévisions météorologiques. Son rôle a cependant été erratique, cet hiver.

Un deuxième jet-stream, effectuant une rare excursion au nord de la zone tropicale de l'Amérique Centrale, est venu embêter les météorologues.

Les deux jet-streams sont des fleuves d'air se déplaçant rapidement. Larges de plusieurs centaines de milles et profonds de 20,000 pieds. Ils circulent vers l'ouest, autour de l'hémisphère, à une altitude de quatre à sept milles. Entre autres choses, ils contrôlent la forme et la direction des tempêtes et les zones intermittentes de basse pression qui produisent souvent la neige et la pluie.

Les experts américains n'ont pas parlé souvent du jet-stream tropical parce qu'il n'a jamais tellement affecté le temps aux Etats-Unis et au Canada. Ce jet-stream, dont les limites se situent habituellement au-dessus de l'Amérique Centrale, est monté cet hiver jusqu'à la latitude du Golf de Mexico et était beaucoup plus intense que d'habitude.

Mais le jet-stream polaire s'est également écarté de sa course, descendant vers le sud, et a passé presque tout l'hiver à proximité de la frontière Canada-Etats-Unis.

Les Etats-Unis se trouvaient donc "en sandwich" entre les deux jet-streams, ce qui leur a permis d'éviter quelques tempêtes.

Mais le 11 février, il tombait 16 pouces de neige sur certaines parties de la Georgie et de la Caroline du Sud. C'était la pire tempête des 50 dernières années.

Au début de janvier, c'était la Caroline du Nord et le Tennessee qui essuyaient une tempête de neige.

Les experts expliquent cette situation par le fait que certaines tempêtes voyageaient le long du jet-stream tropical et qu'elles se sont intensifiées en se dirigeant vers l'est. Elles entraînaient derrière elles de l'air froid venant du Canada. Il en est donc résulté que ce qui aurait dû normalement tomber en pluie est devenu de la neige.

En même temps, l'avant de ces mêmes tempêtes poussait de l'air chaud qui a grandement influencé le climat du nord.

RETIREMENT – T.H. HARGRAVE

T.H. (Tommy) Hargrave, the Regional Meteorological Communications Officer, Atlantic Region A.E.S., retired on February 19, 1973, following almost 33 years of service.

Tommy joined the Meteorological Service on July 8, 1940, as a Teletypist at Toronto, Ontario. He became a Teletype Shift Supervisor at Toronto in 1957.

In 1960, he was transferred to Halifax, N.S., as District Teletype Inspector for the Moncton Region. Again in 1964 he was transferred to Moncton, N.B., and was promoted to a Technical Officer 4 in 1965. In 1967, he was once again promoted to the position of Regional Meteorological Communications Officer.

His retirement was marked by a large gathering of friends and colleagues at a dinner party at the Magnetic Hill Inn, Moncton, on February 8, 1973. A number of gifts, both useful and humorous, were presented to Tommy and his lovely wife, Phyliss. Mr. G.H. Washburn, Atlantic Regional Superintendent of General Weather Services, acted as Master of Ceremonies for the occasion.



Presentation of retirement certificate. Left to right – Mrs. Washburn, Tommy H. Hargrave, G.H. Washburn, and Mrs. Hargrave.

SUGGESTION AWARD PRESENTATION

On March 15, Mr. K. Harry, Regional Director, Atlantic Region, presented Mr. J. MacLeod, Upper Air Technician, Goose Bay, with a suggestion award. A certificate and a cheque for \$124.80 were presented to Mr. MacLeod for his suggestion that the Allen screws in electrolytic hydrogen generators used by AES be replaced by hexagonal screws.



Presentation by K. Harry left – to J. MacLeod

Photo Courtesy Mr. R. Pyne.

A MODEL OF TURBULENCE

A new model of quasi-geostrophic turbulence in which a field of point vortices are embedded in a continuous flow field has been developed. The random field of point vortices involves a characteristic length which, when introduced into dimensional arguments of the diffusion approximation, modifies the energy and enstrophy cascading ranges. The physical significance of the characteristic length scale is clarified. This theory predicts a more realistic shape of the energy spectra of atmospheric motions at scales shorter than the baroclinic excitation scales and is important in computing the growth of prediction error for inertial range turbulence.

VISIT TO USSR WEATHER SHIP "PRIBOY"

The Soviet weather ship, Priboy, made an operational call to the Port of Vancouver, March 17-22, 1973, to take on supplies.

The AES was "host" agency for the visit. A tour of the Pacific Weather Central and the Institute of Oceanography, U.B.C., was arranged and about 10 senior scientists from the ship took part in the visit. The group included meteorologists, oceanographers and geophysicists. Discussion was facilitated through an interpreter available from the Department of Slavonic Studies, U.B.C. Although all of the Russian scientists had studied English, their ability to converse in English was poor. The visitors asked numerous questions and some lively discussion developed between the Russian scientists and their Canadian counterparts in a number of areas, e.g. synoptic meteorology, sea-slope theory.

The Russians extended an invitation to tour the ships facilities. The University of British Columbia and other government agencies were contacted and a group comprised of representatives from AES, MSD, DND, UBC (oceanography and geophysics) was organized.

The "Priboy" had just participated in a joint US-USSR project to provide more detailed information on the performance characteristics of microwave radiometers mounted on aircraft, and potentially on earth-orbiting satellites.

The study was carried out in the Bering Sea where the Priboy and the U.S. Coast Guard Icebreaker, "Staten Island" were in constant contact with Soviet and American aircraft, equipped with special instrumentation for measuring the state of the sea and the properties of the sea ice. Data from the ships and aircraft will be compared to assess the feasibility of microwave scanning in studying the arctic ice cover.

The Canadian representatives received a complete tour of the ship's facilities and all questions were answered in detail.

Two items on board ship of interest to meteorologists were: an infra-red thermometer to measure the sea surface temperature; an aluminum frame to secure the radiosonde balloon when it is being filled under strong wind conditions.

The visit was successful in extending Canadian hospitality and in maintaining good relations with the USSR Hydro-Meteorological Service. Invitations were received for Canadian scientists to visit the hydrometeorological facilities in Vladivostok.

AES IFYGL STATUS REPORT AS OF MARCH 31, 1973

Shoreline Stations

The six shoreline stations remained operational throughout March. Data processing is proceeding.

Radar/Precipitation

A substantial gap occurred in the March radar data due to the changing to a seven level CAPPI recorder. Processing of the raingauge data continued.

Radiation Network and X-3 Evaporation Pans

These networks remained operational throughout March.

ART Program

Five ART flights were completed over Lake Ontario during March.

This brings to an end the main data gathering phase of IFYGL. However due to an extension of the Energy Balance Program the shoreline stations, the radiation network and the X-3 evaporation pans will continue for the next three months. The shoreline station program will be cut back to one observation per hour instead of one every ten minutes.

FAREWELL PARTY

On Saturday, March 17, a farewell party was held for Mr. & Mrs. Glen Bristow at the "Scramble Inn" at Goose Bay. Glen was presented with a plaque, commemorating his four year tour at Goose Bay as Officer in Charge of the Goose Weather Office. Both Glen and Gladys were presented with a painting by a local artist as a remembrance of the Goose Bay Area.

The Bristows are moving to Toronto where Glen will take up his new job in the Climate Section at Headquarters.



Mr. Haering – right – Presenting plaque to Mr. Bristow

Photo Courtesy Mr. R. Pyne.



Left to Right – Mr. Bristow, Mrs. Bristow, Mr. Haering

Photo Courtesy Mr. R. Pyne.

U OF T FINDS A NEW USE FOR 315 BLOOR ST. W.

A recent announcement by the University of Toronto was to the effect that the former "Observatory Building" at 315 Bloor St. W. would soon accommodate two activities which for many years have been located in Simcoe Hall. The two are:

Office of Admissions
Secondary School Liaison Office

The announcement forecast that their offices would be moved to Bloor Street the weekend of March 23-26.

ALMANACS LIKE RACING SHEETS FOR GAMBLERS ON WEATHER

by N.N. Powe — The Montreal Star's Weather Columnist

It seems that in early March, with winter showing signs of breaking, people become particularly concerned about the weather outlook: Will there be another snowstorm? When will it come? Is there a chance of an early spring?

In 1971, after the devastating snowstorms on March 4 and March 7, local radio stations whetted public curiosity by facetiously drawing attention to an almanac forecast of another snowstorm.

This year, after the onset of spring-like weather, the almanacs were brought out and their forecast of a severe snowstorm aired again.

The result was the same both times.

Many folk whose activities could be disrupted by a snowstorm, took the forecasts seriously, and over a period of two or three days there was an escalation of phone calls to the Weather Office asking when "the storm" would begin.

For some, it took a great deal of convincing that the storm was fictitious.

The news media rates the airing of the weather forecast as a public service. It is obviously quite the contrary when they air a forecast of a storm that cannot be confirmed by the current weather charts.

But there is no denying the fact that accurate weather forecasts, days or weeks in advance, would be a real asset and would be in many ways economically rewarding.

Pharoah's dream

Perhaps the earliest story of successful long-range forecasting is that of Joseph in Egypt, when he interpreted Pharoah's dream to mean seven rich years followed by seven lean ones. Using this prediction the Egyptians stored up enough grain during the prosperous years to tide them over the years of famine.

Almanacs have had a long history, dating back at least to the 12th Century when manuscript versions served as the first calendars, registers of ecclesiastical festivals and saint's days, and a record of astronomical phenomena.

The first printed almanacs appeared in England in the 15th Century. The first American almanac was printed in New England about 1649 and during the 18th Century several came into existence, including one published by Benjamin Franklin and known as Poor Richard's Almanac.

During the 18th and 19th Centuries there were as many as 2,000 sponsored by various trade organizations and fraternal, military and religious groups, but ultimately they became a medium for advertising and are credited with being the forerunners of our present magazines.

The current almanac with the longest history is The Old Farmer's Almanac that built up a reputation for forecasting New England weather that predates the actual development of a real weather service on this continent.

This publication has recently taken on an even more imponderable task of providing detailed forecasts for 16 regions, one of which is purported to include the weather predictions for Montreal and Toronto.

Patent Medicines

Other almanacs have been available for use in Canada. A yellow covered booklet with an engraved portrait of Dr. Chase was a familiar possession in Canadian homes in the first quarter of the century and a Canadian edition is still circulated as an advertising medium for patent medicines. It had its beginnings in the 1850s.

The Montreal area has two almanacs of its own printed in French, Almanac du peuple and Almanac Moderne, both published by a local firm.

The fact that a number of almanacs present predictions for the same geographical boundaries introduces a competitive spirit, and, of course, the fact that they do not agree in their predictions casts immediate doubt on their credibility.

To the meteorologist the frequent near-failures and outright failures come as no surprise.

It is the practise of the almanac publishing firms to go to press at least six months before the effective date of the almanac, implying that some predictions must be made at least 18 months ahead of time.

Satellite photographs of earth have shown vividly that the atmosphere flows in two streams, one around the Northern Hemisphere the other around the Southern Hemisphere.

Like a brook that you have watched while fishing on a summer's afternoon, cloud patterns reveal that these streams have whirls and swirls whose birth, movement and disappearance take place over a relatively short period.

In the fishing stream the period may be only minutes. In the hemispheric stream the life span may last from three to six days. But it is these erratic swirls and whirls

we call disturbances or storms, which cause our winds, clouds and our rain and snow. To be effective long-range forecasting would have to establish when and where the whirls and swirls would appear, the paths they would follow and what area they would influence.

The meteorologist studying his weather charts can identify the influences that will produce a low pressure area and describe in some detail its ultimate history a day or two in advance. The best techniques presently in use can be rated as fairly effective for three days, better than chance for four days, and only in special situations reliable for up to five days.

All the Factors

The accurate timing of a storm, a year and a half ahead of time would involve the correct assessment of such influences as the probable flow of warm air off the Gulf of Mexico; a recent surge of cold air southwards over the prairies; the water temperature off the Atlantic coast; the presence of extensive low-level cloud over the central continent to cut off the heating of the sun; the position of the snowline across the continent, and even the amount of open water in the Great Lakes or the St. Lawrence River system.

From this it can be seen that it takes the coincidence of several influences to produce a particular storm at a given time and place.

Is it any wonder then that a meteorologist would be skeptical that reasonably consistent forecasts could be produced so far ahead.

However, the almanac forecasters have one aid going for them — climatological records.

A study of the past weather events can reveal a great deal about the probable weather for any particular part of the year.

In Montreal there haven't been many years that snow has not fallen between Christmas and New Year's Day so what better to forecast than a snowstorm just after Christmas.

McGill records also show that over the last 100 years rain has been reported on every date in the winter, and one would be in the realm of probability in forecasting rain and mild weather at any time during the winter.

A well-prepared almanac using climatological data should be treated as one would a racing form, if betting on horses. The racing form gives past accomplishments of horses and jockeys and may go so far as to suggest a favorite to win, place or show. But no one is likely to become rich adhering to these choices.

An almanac arranged realistically should suggest a weather event for each period that is possible, if not probable. If the event does occur at or near the indicated date then the laws of probability will have been satisfied.

Meteorologists could demonstrate that at any given time there would be at least one significant weather disturbance over or adjacent to the North American continent, but surely it taxes the imagination to think that 18 months ahead of time it would be humanly possible to place one of these disturbances consistently in the right place, at the right time and on the right course?

"IN THE PUBLIC SERVICE" LECTURE TO FIRST YEAR SCIENCE STUDENTS

On March 6, 1973, Mr. C.D. Henry of the Prairie Weather Central, delivered a lecture to First Year Science students at the University of Manitoba. The title of Mr. Henry's talk was "Meteorology in Society". In his lecture of about 40 minutes duration, Mr. Henry outlined the applications of meteorology, services, research activities and concluded with a brief discussion of AES goals. About 20 students were in attendance. The talk was well received and was followed by a question period.

WEATHERWITS

The following article has been received from Mr. R.G. Lawford, an AES Meteorologist currently on Educational Leave. Mr. Lawford is the inventor of the game of "WEATHERWITS" and has personally had a quantity of the units produced which he is currently marketing. The AES does not endorse the game in any way but AES employees might like to know it is available.

AN INNOVATION FOR INCREASING THE PUBLIC'S AWARENESS OF METEOROLOGY

The problem of making the public aware of the importance of meteorology and its underlying principles has been approached in many different ways. One way currently being tried by the Scientific Dimension is the new simulation game WEATHERWITS.

The game, which simulates an operational forecast service projects players into a forecast office where they become forecasters and must apply scientific principles to determine how the future weather will affect life in their community. At the outset of the game each individual (maximum 7, minimum 1) is stationed at one of Canada's major weather offices. Round one commences when each player draws an observation card from the deck of 12 cards at his office. Based on the month, and meteorological parameters observed at 7 a.m. in the morning such a barometric pressure, surface wind, atmospheric stability, cloud cover and upper level winds given on the observation card each forecaster selects the three events he feels will occur in his region of responsibility during the next 24 hours. These events vary from location to location depending on the main weather-sensitive industries and recreations of the area. Some of the 28 effects of weather on society are duplications of past experiences while other events are futuristic and represent possible happenings. After the forecaster has committed himself by writing his forecasts on the score

sheet before the deadline, he verifies his prediction. In order to introduce variability into the game (not to mention simulating the apparent randomness of the atmosphere resulting from turbulence and poorly defined initial states) this verification takes place by referring to the reality card. By combining the letter on the back of the observation card and the result produced by a random number generator (a die) one player reads from this card the events which actually occurred. If a forecaster makes an accurate forecast he is rewarded with points. On the other hand a 'bust' forecast resulting from incorrect use of the initial observation is punished by a transfer of the erring forecaster to Frobisher Bay. With the possibility of drawing a transfer card of a misfortune card on a given turn taken into consideration, the probability of an informed meteorologist making a correct forecast on a given round is just over 50 per cent, although this figure varies from office to office.

The game progresses until one forecaster accumulates 100 points or 25 rounds have elapsed. Forecasters who move to Frobisher Bay more than three times in the course of a game are prematurely retired from the weather service.

The game is designed to stimulate people's interest in meteorology rather than turning them off with highly technical language. As a result the base map contains simple rules which will assist a novice in becoming a successful forecaster. It can be played by all between 11 and 111 hence it can be a useful training device for secondary school courses in science and geography or training programs for weather dependant trades such as foresters, pilots and even meteorological technicians. Besides its educational aspects the game is entertaining and promises to provide you and your friends with hours of worthwhile interaction.

JUST NAME IT: CHANCES ARE IT'S BEING STUDIED

by Jack McArthur, Toronto Star

"This needs more study before we act" . . .

. . . As the husband said when his wife suggested they start a family.

. . . As the wife said when her husband suggested they buy a house. (She said they should hire a consultant to do research on his long-term earnings possibilities, the probable future growth of the industry and company in which he was employed, the interface between their personalities and the realities of living in a house compared with apartment-dwelling.)

The demand for more study is, in fact, the dominant new characteristic of modern life. Fifty years ago, people and companies just went ahead and did things as best they could. Of course, 40 years ago, we had the great depression.

These days, we study the juice of everything. Urban development, northern resource exploitation, tax reform, constitutional reform, land reform, drugs, booze, the French language in Canada . . . you name it, they're studying it. This is the great growth industry of the 1970's, with nowhere to go but up, wafted on millions of dollars being committed by governments and corporations.

It Provides Jobs

Study is just great. It provides well-paid jobs for studies, new institutions such as the Economic Council of Canada. Sometimes it even gives us valuable new facts and theories upon which better decisions could be based, if they were taken.

Of course, studying isn't worth much if there's nothing left to study. (If I were you, I wouldn't say that right out in public. It's not popular at all.)

All too often, however, this is the sequence of events:

It's decided that some bold new move may be called for. Researchers and statisticians and theorizers are mobilized, and quite rightly, to examine the subject in its glorious complexity. They report.

Their reports recognize, implicitly or forthrightly, that the proposed venture is going to shake up a lot of people and that there is a mess of bitterly conflicting ideas about what should be done, how it should be done and what might happen if it's done.

They also tell us there are many possibilities that cannot be known, only guessed at. Study, then, frequently substitutes the insecure realization of uncertainty for a comfortable but misguided feeling of certainty.

To see how horribly true that is just think about Canada's past ventures into tax reform, changing the Canadian constitution and bilingualism and our presently expanding hassle over the Arctic resource explosion.

Action Still Stalled

The next step in this process logically is some action based on the studies.

That's where things often break down. Everyone has gotten too worried or excited. Arguments proliferate and political and corporate courage diminishes. A subconscious desire to stick heads in the sand attacks people. If only it would go away!

Aha! Here's the answer. Have some more studies. These often are thinly disguised explorations of old ground and recitations of old arguments, but they serve the purpose of delaying any step into the unknown.

There's just one problem. Decisions get put off in an era when almost uncontrollably rapid change requires decision-making which is both quick and well-informed. Events overtake the sluggish fact-seekers and often relieve them of all necessity for deciding anything, except how to cope with the nasty problems which have appeared because no long-term policy was adopted.

This may hurt a lot of people — more than would have been hurt by earlier adoption of a comprehensive program. But it's hard to find anyone to blame. How can you blame some one who did nothing because he didn't have "enough information."

The only possible answer is a royal commission to study this phenomenon.

NOSTALGIA DEPT.

Remember When We Talked About "The Director"? Now Current Headings
For Correspondence Directed To "Directors-General and Directors".

1. Director-General, Atmospheric Research Directorate
2. Director-General, Central Services Directorate
3. Director-General, Field Services Directorate
4. Director, Administration Branch
5. Director, Instrument Branch
6. Director of Meteorology and Oceanography
7. Director, Program Development and Evaluation Branch
8. Regional Director, Atlantic Region
9. Regional Director, Quebec Region
10. Regional Director, Ontario Region
11. Regional Director, Central Region
12. Regional Director, Western Region
13. Regional Director, Pacific Region
14. Director, Field Meteorological Systems Branch
15. Director, Canadian Meteorological Centre
16. Director, Atmospheric Processes Research Branch
17. Director, Environmental Research Branch
18. Director, Meteorological Services Research Branch
19. Director, Air Quality Research Branch
20. Director, Training Branch
21. Director, Meteorological Applications Branch

PERSONNEL

The following transfers took place:

E.C. Birch	From: 22 NORAD Region Weather Centre, North Bay To: Central Services Directorate, AES HQ, Downsview
Mrs. C.M. Landry	From: Communication Centre, AES HQ, Downsview To: Ice Central, Ottawa
D.B. Fraser	From: SSU Western Region To: OIC, Arctic Weather Central
D.K. Smith	From: Field Services Directorate, AES HQ To: Atmospheric Research Directorate, AES HQ
D.A. Bernachi	From: Weather Office, Regina To: OIC Weather Office, Saskatoon
E.T. Hudson	From: Maritimes Weather Office, Halifax To: Arctic Weather Central, Edmonton
H.M. Hacksley	From: 1 Canadian Air Group, Lahr To: Weather Office, Regina
G.E. Bristow	From: Weather Office, Goose Bay To: Central Services Directorate AES HQ

The following are on temporary duty or project assignment:

Mrs. H.J. Routledge	From: Winnipeg Weather Office To: CFB Winnipeg
Miss C.E. Klaponski	From: CFB Winnipeg To: CFB Comox
F.E. Burbidge	From: Arctic Weather Central, Edmonton To: SSU Western Region, Edmonton
J.W.A. Vanier	From: Weather Office, Montreal To: Management Development Assignment, Quebec Region Montreal
S.V.A. Gordon	From: OIC Prairie Weather Central, Winnipeg To: Acting Head, Forecasting System, FSD, AES HQ
D.S. McGeary	From: Prairie Weather Central, Winnipeg To: Acting OIC, PWC, Winnipeg

P. Johns From: Head, Forecasting Systems, FSD, AES HQ
 To: Acting Chief, Forecasting, Computers & Communications
 System Division, FSD, AES HQ

R.C. Graham From: Chief, Forecasting, Computers and Communications
 Division, FSD, AES HQ
 To: Chief, Ice Division, Central Services
 Directorate, AES HQ

Y.G. Ishii From: Weather Office, Toronto
 To: Secretariat, FSD, AES HQ

Mrs. W.A. Batten Part time
 To: School of Meteorology, Trenton

J.T. Zawatsky From: Training Command, Winnipeg
 To: Classification Project, FSD, AES HQ

The following have accepted positions as a result of recent competitions:

72-AES-CC-295 Meteorology MT5
 OIC
 Weather Office, Churchill
 – W.L. Ranahan

72-AES-CC-251 Meteorology MT7
 Supervising Prog Analyst
 Arctic Weather Central
 – L.D.F. Chu

72-AES-CC-287 Meteorology MT11
 Director
 Field Meteorological Systems Branch
 Field Services Directorate, AES HQ
 – G.L. Pincock

72-AES-CC-286 Meteorology MT6
 Hail Research Planning and Field Forecasting Meteorologist
 Environmental Research Branch
 Atmospheric Research Directorate, AES HQ
 – J.B. Maxwell

72-AES-CC-66 Meteorology MT6
 Instrument Development Meteorologist
 Instrument Branch AES HQ
 – C.E. Robinson

Resignation: M.M. Bryson,
CFB, Cold Lake

Deceased: R.E. Hody
Regional Superintendent Observation Service
Moncton, N.B.

APPOINTMENT

Gordon Muttitt Appointed Officer-in-Charge of B.C.'s Major Weather Office

Gordon Harold Muttitt has been named Officer-in-Charge of the Pacific Weather Central, succeeding David Strachan who retired last year. The appointment was announced by J.L. Knox, Director of the Pacific Region of the Atmospheric Environment Service.

Director, Field Meteorological Systems Branch — G.L. Pincock

Mr. G.L. Pincock has been offered the position of Director, Field Meteorological Systems in Field Services Directorate and has accepted this position.

Mr. Pincock will not report to his new position until arrangements have been made to fill his former position of Regional Director, Ontario Region, AES. A competition to fill this position will be announced at an early date.

TRIVIA

Ain't It The Truth! !

Time was when the greatest fear in a man's life was to be poor. It was the worst catastrophe that could befall him. But times have changed. Now you can get subsidized housing, health and dental care, university scholarships and a host of other welfare benefits . . provided you are poor enough. All that is needed to enable you to enjoy many of life's advantages is proof that you are disadvantaged.

And who is to say that's bad? It's human and kind. However, in curing poverty — society has created another problem group; the middle class.

Nobody wants to be middle class anymore because the middle class have an awkward amount of money . . . too little to live as well as the rich and too much to live as well as the poor . . . The middle class is caught between. Instead of being able to live downtown (like the rich and the poor) the middle class sucker has to buy a crummy lot 35 miles from town because that's all he can afford. And then he spends the rest of his life trying to pay his bills, educate the kids, and meet the mortgage, with nobody to help him. With middle class life becoming increasingly unsavory and poverty becoming progressively more attractive, the following scene may soon be commonplace at the office.

"Mr. Goodie, I wonder if I could speak to you for a minute?" "What is it Smedley? I'm pretty busy." "It's about my salary, sir, I wonder if you could give me a decrease?" "... "But you had a decrease less than a year ago Smedley." "I know sir, I wouldn't ask if it wasn't important; but I sure could use less money, Mr. Goodie."

"What size decrease did you have in mind?" "Well, I was hoping for a \$25.00 cut in salary." "Twenty-five dollars! That's a mighty big slice, Smedley. What have you done to merit it?" "I've worked for the company 23 years, Mr. Goodie, I've never let you down. My work has always been up to standard." "I realize that, Smedley, but \$25.00? Wouldn't you be satisfied with a \$15.00 cut? We have a budget problem right now. We're already below last year's salary figures. And I hear the Union is agitating for another general wage cut. But to look at it from Management's side, lower wages means higher profits and that leads to more taxes you know."

"Mr. Goodie, a \$15.00 cutback is better than none, but the wife and I had set our hearts on a \$25.00 decrease." "How about \$20.00?" "If I made \$25.00 less we'd be eligible for an apartment in the city's new development . . . the one downtown with a pool, sauna and tennis courts. Besides, my son would qualify for a government scholarship, and we could get his teeth fixed."

"You drive a hard bargain, Smedley. But you win. You get a \$25.00 decrease on this condition. If your work slips, you'll take a \$10.00 raise."

"Bless you, Mr. Goodie." "And, Smedley, will you invite me over for tennis and a swim night when you get in your new place?" "Certainly sir. I believe the poor should share with the less fortunate."

* * *

Snowflakes bigger than footballs fell in Baratsk, Siberia during a 1971 storm. The biggest flakes measured 8 inches across and up to 20 inches in length. Unusually strong temperature fluctuations caused the flakes to swirl up and down in a cloud and roll themselves into bigger and bigger flakes.

* * *

Everyone appreciates a clever remark, especially when it's his own.