

ZEPHYR

JUNE 1973 JUIN

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Published Under Authority of the Assistant Deputy Minister
Atmospheric Environment Service

Editor: B.M. Brent

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T.L. (Lloyd) Richards

Photo by Hardy Photography

TORONTO SCIENTIST RECEIVES MERIT AWARD

Mr. T.L. (Lloyd) Richards, Chief of the Hydrometeorology Division of the Atmospheric Environment Service, Environment Canada, was named the recipient of the International Hydrological Decade (IHD) Merit Award for 1972. The award was presented at the IHD Canadian National Committee's annual banquet in Charlottetown, P.E.I. on June 13th, 1973. Major-General, H.A. Young, Chairman of the Canadian National Committee presented the award.

The International Hydrological Decade (1965-74) was launched by UNESCO to promote international cooperation in research, studies, and training of specialists, in scientific hydrology. Its purpose is to enable all countries to make fuller assessment of their water resources and to rationalize their use. Over one hundred countries, including Canada, have created committees to carry out national programs. Canada's program is one of the two or three largest and most active in the world. During the IHD Decade, one award is presented each year for distinguished service to the science of hydrology in Canada.

Mr. Richards was a member of the Canadian IHD delegation at the Mid-Decade Conference in Paris in 1969 and the IHD Coordination Council in the same city in 1971. For many years Mr. Richards has been deeply involved in Great Lakes Research; he has served as Co-Chairman on both the Steering and Management Committees for the International Field Year on the Great Lakes (IFYGL) - a major U.S.-Canadian research undertaking concentrating on Lake Ontario. In addition, Mr. Richards has served on many other committees to further the IHD cause in Canada. As a scientist, he has authored more than 40 papers, primarily dealing with the application of meteorology to the solution of hydrological and water resource problems.

Mr. Richards was raised in Hanover, Ontario, and graduated from McMaster University with Honours in Mathematics and Physics in 1940. After wartime service as a weather forecaster at several RCAF bases, he received his Master's degree in Physics (Meteorology) from the University of Toronto in 1945. Following a tour of duty at the Trans-Atlantic Weather Office at Gander, Newfoundland, Mr. Richards joined the staff at the Toronto Weather Office in 1948. In 1961, he was appointed Head of the newly formed Lakes Investigations Unit at the headquarters of the Canadian Meteorological Branch (now Atmospheric Environment Service). He assumed the duties of his present position in 1967.

SUNNYSIDE OF THE ARCTIC

By M.K. Thomas

In May 1973, a new national record for the duration of bright sunshine in any month at any station was established. Contrary to first guesses, the sunniest month in Canadian climatic history did not occur on some beach in southern Canada nor even on the Prairies, but high in the Arctic at Eureka. During May 1973, there were 620 hours of bright sunshine reported from that observing station. The Eureka sunshine record began in 1968 and prior to this year the greatest duration had been 543 hours in May 1972.

In recent years Campbell-Stokes sunshine recorders have been installed at a number of stations on the Arctic islands. Because the Canadian recorder is designed for temperature latitudes, it has been necessary to mount two modified recorders back to back in order to record sunshine which may be possible over the full 24 hours. At Resolute, where the record began in 1948, the maximum monthly duration is 536 hours in May 1970. while at Sachs Harbour the maximum is 528 in June 1958. Other island and mainland coast records, all established in the April, May, June period are 514 hours at Alert, 543 hours at Isachsen, 529 hours at Aklavik-Inuvik, 386 hours at Coppermine and 473 hours at Cambridge. In southern Canada the records are - Vancouver 381, Regina, 384, Ottawa 350 and Halifax 287 hours.

QUELQUES COMMENTAIRES SUR LA MODIFICATION ARTIFICIELLE DU TEMPS

par B.J. Mason D.Sc.
traduit de l'anglais par R.M. Gagnon

AVANT-PROPOS

La traduction d'une partie d'une conférence que présentait le docteur B.J. Mason à la Réunion internationale de la physique des nuages en août 1972 à Londres.

Un sujet qui n'a pas été abordé de façon très poussée à cette conférence, mais qui peut toutefois n'avoir jamais été très éloigné de nos pensées, est la modification artificielle des nuages et de la précipitation. Le comité d'Organisation avait proposé une discussion sur la raison d'être de l'ensemencement des nuages mais, à notre surprise, nous n'avons reçu aucun commentaire sur le sujet, si ce n'est très peu.

Ayant suivi d'assez près les progrès dans ce domaine depuis près de vingt ans, sans toutefois y avoir été directement impliqué soit personnellement soit officiellement, je ne peux me dérober à la conclusion que, à part quelques exceptions notoires, de telles opérations ne se sont généralement conformées ni aux principes généralement acceptés, ni aux normes scientifiques de l'expérience et de l'analyse, et sont alors impuissantes à fournir des réponses objectives à des questions telles que: "Dans quelle possibilité? et et jusqu'à quel point est-il possible de modifier la précipitation par l'ensemencement artificiel?" Je crois que la majorité des météorologistes consciencieux approuvent mon opinion que, dans plusieurs pays, les politiciens et les entrepreneurs, ignorant ou souffrant difficilement les faits et les problèmes scientifiques, mettent en place et poursuivent d'importants projets de modification du temps sans se préoccuper d'avoir un directeur scientifique compétent ni même d'obtenir des avis et des conseils scientifiques adéquats et que ceci peut avoir de sérieuses répercussions sur la réputation de la météorologie comme science et comme profession.

Ce n'est un secret pour personne que de telles opérations soient mises de l'avant avec des euphémismes tels que: projets d'engineering météorologique ou de contrôle du temps en se basant sur les prémisses que les hypothèses et les techniques de base sont déjà admises et que les problèmes qui restent à résoudre relèvent entièrement de génie ou de la logistique. Mais aucun écran de fumée administratif ou jargon propre à expliquer une décision ne peut voiler le fait que les promoteurs de cette approche continuent d'utiliser les mêmes concepts et techniques inadéquats qui ont failli à pourvoir des réponses convaincantes durant les dix dernières années.

Il y a une répugnance marquée à envisager des faits inopportuns et incontestables qui ont été clairement révélés dans cette conférence; entre autres que nous commençons à peine à comprendre les processus physiques et dynamiques compliqués qui contrôlent l'intensité, la durée et la répartition des précipitations comme en témoigne notre incapacité évidente à prédire ces quantités à 50 pour cent près, même pour de courtes périodes; (périodes plus courtes que la durée d'une tempête). Voici deux exemples de notre ignorance en ces matières fondamentales: nous sommes incapables de décrire, encore moins de quantifier les mécanismes par lesquels les nuages se dissipent par brassage turbulent avec l'air environnant (sujet d'une importance fondamentale pour expliquer la croissance et la dynamique des nuages); de même, nous ne pouvons expliquer le fait que dans quelques nuages de type cumulus légèrement surgelés, la concentration de cristaux de glace est jusqu'à

10,000 fois supérieure aux concentrations de noyaux glaçogènes mesurés dans l'air environnant et encore de tels nuages sontensemencés sous prétexte qu'ils sont déficients en noyaux glaçogènes. Il est clair que les problèmes soulevés par l'évaluation physique d'une tentative d'ensemencement des nuages sont essentiellement les mêmes que ceux de prévoir la précipitation naturelle en l'absence d'ensemencement et nous sommes loin de pouvoir le faire à l'intérieur de la fourchette de 10 pour cent généralement admise comme effets de l'ensemencement. Ceci me conduit à défier la thèse voulant que la modification du temps soit la principale justification pratique de la recherche en physique des nuages et plutôt suggérer que, considérés à l'échelle mondiale, les bénéfices économiques et sociaux possibles d'une prévision exacte de la précipitation sont plus lourds dans la balance d'un future prévisible que ceux de la modification.

Devant l'absence d'une explication physique, nous devons compter grandement sur l'évaluation statistique des projets d'ensemencement. Toutefois une expérience conçue et exécutée avec soin, continuée sur une longue période de temps avec les garanties statistiques nécessaires peut convenablement produire un résultat statistiquement significatif, quoique non nécessairement physiquement convaincant (en pratique très peu ont donné de tels résultats) et ceux qui souhaitent être secourus par les statisticiens, trouveront très peu d'encouragement et d'éclaircissement dans l'analyse très exhaustive, très complète et très détaillée du projet "Whitetop" d'une durée de cinq ans.

Lors d'une situation d'urgence, par exemple d'une longue période d'extrême sécheresse, il peut être difficile de résister aux pressions intenses de la politique et du public pour la mise en marche d'un programme d'urgence d'ensemencement qui pourrait, peut-être, être justifié comme panacée ou encore justifié par le fait que, en état d'urgence, il est valable d'essayer n'importe quel remède disponible dont le coût n'est pas prohibitif, et qui n'empirera probablement pas la situation. Cependant, je crois qu'il est nécessaire d'établir une distinction claire entre les opérations d'urgence de cette sorte et les expériences soigneusement conçues qui ont quelques chances de produire des réponses valables à des questions scientifiques proprement formulées. En conséquence, j'insiste auprès des groupements scientifiques de météorologistes pour établir, à l'aide de leur société savante, des mécanismes pour examiner tout projet de modification du temps et pour accorder appui et reconnaissance uniquement à ceux qui répondent à des critères scientifiques plutôt stricts, qui ont comme directeur de projet un scientifique compétent et qui admettent le contrôle et l'évaluation par des scientifiques indépendants. Les projets qui font défaut de rechercher ou à qui est refusé un tel appui devraient être désavoués comme n'étant pas scientifiquement valables et devraient ne pas être éligibles pour présentation à un congrès scientifique. Je pense que c'est seulement en imposant de tels standards que la profession météorologique peut sauvegarder sa réputation et son intégrité et minimiser la confusion que des activités mal conçues ou secrètes peuvent apporter sur le sujet. Si l'on permet à ces projets de continuer sans être combattus et même d'acquérir un vernis de respectabilité scientifique en commanditant un certain nombre de projets de recherche de base, il y a un sérieux danger que lorsque, éventuellement, ils deviendront malfamés, ils fassent tomber le sujet tout entier dans le discrédit.

Finalement, je me préoccupe des répercussions internationales possibles de la modification du temps et du climat. On discute actuellement que celle-ci est un don que les pays développés peuvent accorder aux pays en voie de développement et que l'Organisation météorologique mondiale devrait s'impliquer plus activement dans ce domaine. Bien que les demandes d'aides et de conseils ne doivent pas être ignorées, mon opinion est qu'on ne doit pas donner la permission d'aller de l'avant dans un projet d'ensemencement des nuages sans avoir au préalable effectué sur place une enquête approfondie sur le climat local et le

genre de nuages qu'on y retrouve. Même alors, un pays évolué doit considérer très attentivement avec quelle prudence il doit exhorter un pays en voie de développement à utiliser des techniques vraiment non-éprouvées avec tous les problèmes et les difficultés afférents qu'il n'a pu lui-même résoudre avec des ressources infiniment plus grandes. Par dessus tout, un pays en voie de développement devrait être protégé contre l'exploitation par des firmes commerciales d'ensemencement des nuages.

Mais si l'on scrute un avenir un peu plus lointain, mes craintes sont encore plus grandes. Si les modifications du temps et du climat ou leur contrôle devenaient un jour réalisables, ou même plausibles à une échelle internationale, une tentative mal fondée par quelque pays que ce soit de mener un tel projet sans accords internationaux amènerait la météorologie dans l'arène des controverses et des dissensions de la politique internationale, un rôle étranger et impensable pour une science qui a fait peut-être plus que tout autres pour cimenter les relations internationales depuis une centaine d'années. Les conséquences pour des programmes internationaux tels la Veille météorologique mondiale et le programme global de Recherche atmosphérique pourraient être désastreuses et je souhaite que les météorologistes de partout reconnaissent ce danger et y obvient.

TORONTO SCIENTIST NAMED WINNER OF PATTERSON MEDAL

TORONTO — Dr. R.E. (Ted) Munn, Chief Scientist with the Atmospheric Environment Service of Environment Canada has been named 1972 winner of the Patterson Medal Award for distinguished service to meteorology in Canada. The award was presented by J.R.H. Noble, Assistant Deputy Minister of the Atmospheric Environment Service on the occasion of a banquet at the Shore Club, Hubbards Beach, near Halifax, on the evening of Thursday, May 31st. The banquet was held in conjunction with the Seventh Annual Congress of the Canadian Meteorological Society at the St. Mary's University, Halifax, from May 30 to June 1.

The Patterson Medal, struck by the Canadian Mint, features a likeness of Dr. John Patterson, Controller of the Meteorological Service of Canada from 1929 to 1946 — the man for whom the award was instituted and its first recipient. The medal is awarded annually.

Dr. Munn has an international reputation in the field of micrometeorology and, in particular, his work on the meteorological aspects of air pollution has been widely recognized. He has also carried out many studies on the relationships between meteorology and the other environmental sciences. He has published two textbooks, one of which "Descriptive Micrometeorology" is widely used across North America as a standard text for university courses in such subjects as agricultural science, geography and engineering. In addition, he has authored over 40 papers on various aspects of his research which have appeared in numerous scientific journals.

Dr. Munn has received considerable recognition as a scientist. During 1970, he was Visiting Scientist at the Institute of Meteorology of the University of Stockholm. He is editor of the "Journal of Boundary Layer Meteorology" and Assistant Secretary of the International Association of Meteorology and Atmospheric Physics in addition to holding several other posts. In 1972, he was honoured by the American Meteorological Society with an award for his outstanding contribution to the advance of Applied Meteorology.

After joining the meteorological service in 1941, Dr. Munn served as a weather forecaster in Montreal, Newfoundland and Nova Scotia. In 1956, he became project manager for a special study of air pollution in the Detroit-Windsor area. He earned his PhD from the University of Michigan while engaged in this work. In recent years he has been based in Toronto with the Atmospheric Environment Service where he has carried out his work in micrometeorology. He is married and has 4 children.



*Mr. J.R.H. Noble, Assistant Deputy Minister, AES,
Presents the Patterson Medal to Dr. R.E. (Ted) Munn*

UN CHERCHEUR DE TORONTO RECOIT LA MEDALLE PATTERSON

TORONTO — M. R.E. (Ted) Munn, PhD, Chef de la recherche scientifique au Service de l'Environnement atmosphérique, Environnement Canada, est le lauréat pour 1972 de la médaille Patterson, décernée pour services insignes à la météorologie au Canada. Ce prix lui a été remis par M. J.R.H. Noble, Sous-ministre adjoint du Service de l'Environnement atmosphérique, lors d'un banquet au Shore Club, à Hubbards Beach près de Halifax, dans la soirée du jeudi 31 mai. Ce dîner fut donné à l'occasion du 7^{ème} Congrès annuel de la Société canadienne de météorologie, qui se tiendra à l'Université St. Mary de Halifax du 30 mai au 1^{er} juin.

La médaille Patterson, frappée par la Monnaie canadienne, porte l'effigie de John Patterson, Contrôleur du Service météorologique du Canada de 1929 à 1946 — le premier lauréat de la médaille, qui fut fondée en son honneur et qui est maintenant décernée tous les ans.

M. Munn jouit d'une renommée internationale en micrométéorologie et en particulier ses travaux touchant les aspects météorologiques de la pollution de l'air lui ont valu une autorité reconnue. Il a effectué de nombreuses études sur les rapports entre la météorologie et d'autres sciences de l'environnement. Il a publié deux manuels, dont l'un, "Descriptive Micrometeorology", est utilisé partout en Amérique du Nord comme ouvrage de base pour des cours universitaires dans des domaines tels que l'agronomie, la géographie et le génie. Il est, par ailleurs, l'auteur de plus de 40 études sur divers aspects de ses recherches, qui ont été publiées dans de nombreuses revues scientifiques.

M. Munn jouit d'une réputation bien établie dans le monde scientifique. En 1970, il a fait un séjour, à titre de savant invité, à l'Institut de météorologie de l'Université de Stockholm. Il est directeur du "Journal of Boundary Layer Meteorology" et secrétaire-adjoint de l'Association internationale de météorologie et de physique de l'atmosphère et occupe en outre divers autres postes. En 1972, l'American Meteorological Society lui a décerné un prix en récompense de sa contribution remarquable au progrès de la météorologie appliquée.

Après être entré au Service météorologique en 1941, M. Munn a exercé des fonctions de prévisionniste à Montréal, à Terre-Neuve et en Nouvelle-Ecosse. En 1956, il a dirigé une étude spéciale sur la pollution de l'air dans la région de Détroit-Windsor. C'est au cours de cette mission qu'il a obtenu son PhD de l'Université de Michigan. Depuis quelques années, il est attaché au Service de l'Environnement atmosphérique, à Toronto, où il effectue ses travaux en micrométéorologie. M. Munn est marié et père de quatre enfants.

TRURO WEATHER STATION



The Truro Weather Station commenced operations October 1, 1960, continuing the complete weather observing program established under the Department of Defence at the Debert Airport late in 1941. The Department of Transport, using civilian staff, took over in 1945. At the time of the move to Truro the staff consisted of R.M. Troop, E.F. Jeffrey, R.F. MacKenzie, and R.J. Graham, Officer-in-Charge.

During the late fifties there was a sharp decrease in flying activity at Debert coincident with a growing demand for the provision of additional weather services to the general public, public utilities, agricultural, forestry and transportation interests, etc. This prompted the suggestion that the station be relocated in Truro, ten miles east south-east of the Airport. Mutually satisfactory arrangements were concluded with the Nova Scotia Government and the N.S. Agricultural College to locate on College ground on Vimy Road.

This location has proven to be quite representative to the area; and has been most convenient for the N.S. Department of Agriculture in establishing and maintaining a close liaison between the weather service and agricultural interests in central Nova Scotia.

In the thirteen years the station has been located in Truro it has been used on several occasions as a test site for new instruments, and for WMO instrument comparison and evaluation programs.

The office was designed in a bungalow configuration to present an appearance that would blend with the residential area in which it is located. It is of brick construction, and has large picture windows facing the 100' x 200' instrument area.

The office is operational full time and is manned by a staff of four meteorological technicians. The present staff members are E.F. Jeffrey, C.E. Wilson, W.R. Ward, and J.A. Shaw, Officer-in-Charge.

PROGRESS REPORT ON THE PBL MODEL

Efforts in formulating an operational planetary boundary layer model (PBL) are well-advanced at the Meteorological Services Research Branch (MSRB) at AES Headquarters. Empirical expressions for forecasting the diurnal cycle of surface temperature and humidity and some improvements in the computer programs will be completed in the next few months at which time the model will be ready for trial integrations on a test case with real initial data (August 30, 1973). This should determine, in a preliminary way, the strengths and weaknesses of the model and pave the way for uniting it with the already existing RUM (Regional Update Model). Following this activity, an appropriately modified and stripped-down version of the complete model will be prepared and tested in a simulated operational environment on the mini-computer (Varian 73) in the National Test Bed Facility of the MSRB.

Output of the model will be hour-by-hour profile forecasts of temperature, humidity and winds at 8 levels from the surface to 1600 m above smoothed terrain at grid-points 67 nm apart. The initial state is determined from standard aerological soundings projected forward by the model on the basis of the observed hourly m.s.l. pressures up to t_0 , the time when the model is to be used for prediction. From t_0 onwards the model accepts as constraining input the m.s.l. predictions of the RUM. Depending upon the computer power required, the model is designed to run rather frequently as required, perhaps even every hour on occasion.

Assimilation of hourly surface information, other than m.s.l. pressure, is one of a number of improvements to be studied after the first version is in operation.

The PBL model output will provide basic predictor fields for point-value weather element prediction and is also designed for application in air quality prediction procedures.

RECALIBRATION OF OZONE INSTRUMENTS AT RESOLUTE

Technician J.J. Bellefleur (ARPX) visited the upper air station at Resolute in late April. The Dobson ozone spectrophotometer was recalibrated in conjunction with a complete electronic updating comprising installation of a new solid state power supply, amplifier, rectification system and external harness. This completes the updating program of all Dobson instruments which was started in February, 1972. The visit also afforded an opportunity to review with station personnel the flight preparation procedures for the mast ozonesonde.

GERALDTON WEATHER STATION

The Geraldton Weather Station, one of three surface weather stations in Ontario operated by an individual under contract agreement with the AES, opened October, 1967.

It is located 175 miles N.E. of the City of Thunder Bay on the Southern limits of the town of Geraldton approximately $\frac{1}{4}$ mile from Barton Bay, and has a temperature range from roughly 50° below zero in winter to the nineties in summer.

Douglas Hamilton is the contractor and his office is staffed with four housewives, Marcille Lecompte, Nicole Bilstad, Angela Wood and Eleanor Ratushniak who all do an excellent job of observing weather. They are diligent and meticulous in their work and are justly proud of their record and constantly striving to improve.

This station takes 24 hourly observations plus specials, 4 synoptics daily and files and closes flight plans via teletype through YYZ. Classes from the schools in Geraldton Longlac and Beardmore are given tours to familiarize the children with meteorology and Telecommunications.

Douglas Hamilton designed and built the office himself and the Ontario Regional Office is justifiably proud of the Geraldton experience.



Douglas Hamilton, Contractor Geraldton W.S.



Nicole Bilstad



Interior of Weather Station



Eleanor Ratushniak



Angela Wood



Marcille Lecompte

RETIREMENT

MRS. DORA FISHER

Mrs. Dora Fisher of the Instruments Branch, Atmospheric Environment Service, retired on June 8, 1973.

To mark her retirement, many of her friends gathered first in the AES auditorium to express their best wishes to her and her husband for the future and to present her with a lovely set of china. An added welcome surprise gift was a painting done by Norman Steinhaur. Warm wishes were extended to her, on behalf of everyone present, by Messrs. R. Vockeroth, V. Turner and H. Gerger. Mr. P. Connor, who acted as Master of Ceremonies, asked Miss J. Musgrave, as the youngest member of the Instrument staff, to present Dora with an orchid.

To add to the festivities of the occasion, a luncheon followed at the Villa Nova Restaurant.

Dora's pleasant personality and cheerfulness to everyone will be greatly missed.





FISCHER AND PORTER PRECIPITATION GAUGES

Sixteen Fischer and Porter precipitation gauges in Northern Ontario Water Resources Study network were visited by Mr. D.A. Carr June 18-23. All gauges were fully serviced and repairs carried out where necessary. The data tapes reveal that all but three gauges operated perfectly during the period April to June, 1973. One gauge failed due to mechanical malfunction while the other two gauges failed due to tampering by a moose at Ranger Lake and a black bear at Ghost River

GREAT LAKES LEVELS

The lower lakes appear to have reached their annual maximum level during June. With the decrease in synoptic scale storm activity the frequency of flooding incidents has also decreased. Unfortunately on consecutive Sundays (17th and 24th) thunderstorms with associated wind and pressure effects caused unexpected set-ups on Lake Erie that are not predictable using currently available techniques. The AES-IWD-MSD task force will study these occurrences with a view to ascertaining whether or not they can be predicted quantitatively. During the month, a report of a study by two members of the task force which correlated water levels at Belle River with wind at Windsor A was sent to the Toronto Weather Office. It will permit the quantifying of flooding forecasts for the Lake St. Clair shoreline.

On June 25, Mr. McCulloch gave a lengthy telephone interview to Mr. Gary Rennie of the Windsor Star about the Flood Warning Program of Environment Canada. At Mr. McCulloch's suggestion the reporter called Mr. G.W. Gee at the Toronto Weather Office for further details.

F.J. (TED) MAHAFFY RETIRES

F.J. (Ted) Mahaffy has retired from the Atmospheric Environment Service. Ted was one of the most senior meteorologists in the Service having joined in 1937. He spent over 25 years in Montreal first at St. Hubert and later at Dorval (UL) where he was Officer-in-Charge. On coming to Toronto in 1964 he served in Forecast Division, and, with the reorganization of the AES, he became Head, Economic Development Weather Services within the User Requirements Division of the Field Services Directorate.

Ted and his wife were honoured on the occasion of his retirement with a wine and cheese party at the home of Roy Lee on June 21st. Over 40 of Ted's colleagues from across Canada gathered to pay tribute to his long career and to wish him many happy years of retirement.

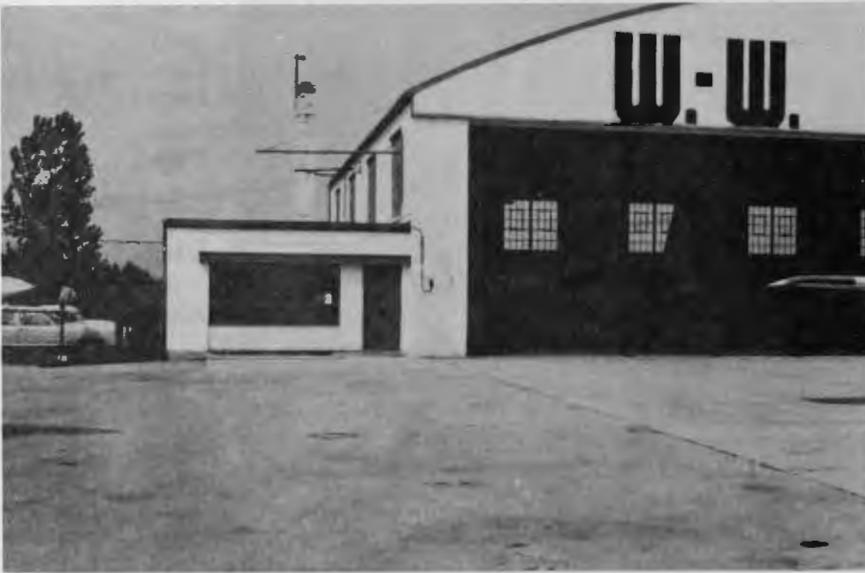
In his farewell address, Ted took note of the many changes that had taken place within the "Met" Service since the 1930's. Ted's reminiscences included his early years at Montreal where he was involved with the first trans-continental flights undertaken by TCA (Air Canada) and the early war years when the first Canadian airmen went overseas to take part in the Battle of Britain. Ted noted that he was the last member of the "famous" OIC conference of the 1950's to retire and that this, in a sense, marks the end of an era.

Ted was presented with fishing gear which he intends to put to good use at his summer home at Baptiste Lake near Bancroft, Ontario.

RELOCATION OF THE WATERLOO/WELLINGTON WEATHER OFFICE TO THE NEW TERMINAL BUILDING

Since June 1966 the Waterloo/Wellington Weather Office was located in a concrete block appendage to a hanger, in a small dingy office, dominated by the noise of two teletypes and using the women's washroom for storage space.

On May 15, 1973, the Office was moved to the recently completed terminal building. Excellent lighting, carpet flooring, drapes, central air conditioning, separate rooms for storage and the teletypes are just some of the features of the new Office. It is furnished on the open landscape plan and the Officer-in-Charge, Jim Millar, and Dave MacDonald are very pleased with their new accommodation.



Old W.W. Weather Office

New W.W. Weather Office





Interior View W.W. Weather Office. Dave MacDonald on Telephone.

A.M. (AL) CROCKER RETIRES

On June 22 there were two functions to honour Al Crocker, Chief of the Professional Training Division, who retired July 3.

Training staff held a luncheon at the Beverly Hills Motel. The purpose of this luncheon was twofold, to express the appreciation of Training Branch staff for his contribution to meteorological training, and to prepare the retiring gentleman for the more formal presentation later in the afternoon.

After the luncheon he was presented with a picture depicting himself cultivating neat rows of Volkswagen plants growing in his retirement garden. Next came two model Volkswagens complete with "Just Retired" signs, an Award of Merit (written on the back of a tephigram) to the AMC Egg Company for service above and beyond the call of duty in supplying country fresh eggs to Training Branch staff, a dozen individually wrapped jelly beans packaged in an egg carton, a beautifully decorated Ukrainian Easter egg, and a box of airmasses complete with three fronts, suitably inscribed with the names, characteristics, and definitions of the airmasses.

Finally, George MacPherson, who is succeeding Al, and Clarence Penner, his boss and colleague for twenty eight years, expressed the appreciation of the entire staff for his contribution to meteorological training and for the warm and friendly associations he has had with everyone during his 35 years of service.



Upper Left —G.A. McPherson, A.M. Crocker, C.M. Penner all wonder what kind of chicken laid this egg.

Upper Right —Victory over two VW's. C.M. Penner looks on in admiration.

Lower Left —J.R.H. Noble wishes A.M. Crocker a happy retirement at the formal presentation.

Lower Right —A.M. Crocker admires a super charged VW, while C.M. Penner looks for more goodies in the "Honest Ed's Shopping Bag".

Later in the afternoon a large group gathered in the auditorium. Clarence Penner, Director of Training Branch, set the stage for an informal but sincere presentation by unveiling the gifts which had been presented to Al at lunch.

Mr. Noble then outlined several of the highlights of his career. Al trained the first group of Air Women as 'Met' Observers. He was a member of the team which set up a forecast service in support of flights at the time of the Quebec Summit Conference in 1944. Al collects Volkswagens like other men collect stamps or coins, but like the rest of us not even the ADMA knows whether some sort of breeding program is taking place or not.

Finally, Mr. Noble quoted the reply to Al's request for transfer to Goose Bay in 1948. The Director wrote "I am convinced that you can make a greater contribution in teaching at Head Office than in serving as a meteorologist at Goose Bay". Time has proven the wisdom of this decision as Al became the AES genius on airmass and frontal analysis

and has had a profound and beneficial influence on the education and career of almost every meteorologist in Canada.

Al was presented with a kit from which to build a stereo tuner, and a wallet.

In his reply Al recounted a number of interesting events. He recalled spending a day on horseback in B.C. early in his career riding up a mountain to check some instruments – and the four hours he spent in the tub recovering. He also recalled the day he climbed the rainpipe at 315 Bloor in order to gain access to the locked building and commence work. He expressed his appreciation and thanks to the many people who had helped him during his career.

The whole AES joins in wishing Al and Jean continued health and much happiness in their new home at Brussels in Huron County, northwest of Guelph.

C.C. BOUGHNER RETIRES



Clarence C. Boughner is retiring this year after a career in meteorology and climatology which extends back to 1933-34 when he became a member of the first M.A. course in Meteorology at the University of Toronto. Specializing in climatology from the beginning of his career, Mr. Boughner was Chief of the Climatology Division from 1949 until 1971 when he became Director-General of the new Central Services Directorate. Besides his many years of leadership in Canadian climatology, Mr. Boughner played an important role in international meteorology for the past 25 years by serving on the Technical Commissions for Agricultural Meteorology and Climatology. In the latter technical commission, Mr. Boughner was President for two 4-year terms beginning in 1960,

and is currently on the Advisory Committee of the Commission for Special Applications of Meteorology and Climatology – a new commission which succeeded the Commission for Climatology in 1971. At home, Mr. Boughner was awarded the Patterson Medal in 1966, and in recent years frequently served as Acting Director and Acting Assistant Deputy Minister during Mr. Noble's absences from the office.

At 4:15 p.m. on Thursday, June 28, one of Mr. Boughner's last days in the office before going on retirement leave, his many friends at AES Headquarters packed the auditorium for a presentation ceremony. In addition to his current colleagues the presentation attracted more than a dozen former associates of Mr. Boughner in the Meteorological Service. When Mr. Boughner joined the Climatological Section in August 1934, the late Mr. A.J. Connor was in charge and there were eight staff members. Three of these – Peter Kerr, who retired in 1949; John Larraway, retired in 1971; and Miss Hilda Burtch, who retires later this year, were in attendance at Mr. Boughner's presentation. Former associates such as Des Kennedy, Les MacHattie and George Robertson and former Directors – Dr. P.D. McTaggart-Cowan and Dr. Andrew Thomson were also present. A particularly touching event occurred just before the presentation when a standing ovation greeted Dr. Thomson and Mr. Noble as the curtains were opened to allow them to enter the front of the auditorium. On behalf of his friends and colleagues throughout the Service, Mr. Noble presented Mr. Boughner with an exquisite Eskimo carving and a copy of "Clouds of the World." Mrs. Ida Ayoub, Mr. Boughner's secretary, then presented Mrs. Boughner with a bouquet of roses on behalf of the staff. In his speech of acceptance, Mr. Boughner paid tribute to the Directors under whom he has worked – Dr. John Patterson, Dr. Thomson, Dr. McTaggart-Cowan and Mr. Noble. He also thanked the old climatology staff, which had numbered less than 20 in 1949, but has grown to nearly 10 times that number as the activities of the section, division and finally the branch expanded to include many aspects of applied meteorology and climatology. Mr. Boughner concluded by telling everyone that he would be thinking of them each sunny morning as he teed off on his favourite golf course. Following his talk, Mr. Boughner, too, received a standing ovation.

After the presentation everyone in the auditorium was invited to the cafeteria for a wine and cheese reception offered in his honour by Mr. Boughner's colleagues in the Central Services Directorate. For more than an hour friends queued to have a few words with the Boughners and to wish them well in their retirement. During the reception several dozen bottles of imported and domestic wines were enjoyed by the gathering and by 6:30 only the odd potato chip and scrap of cheese remained.

In his presentation speech Mr. Noble referred to several sequences of events in Mr. Boughner's career in meteorology. Although he had always been located at Headquarters he did shepherd the moving of the Climatology group several times from 315 Bloor Street to the McMaster Building, to the Medical Arts Building, to 77 Admiral Road, to 260 Richmond Street, to the Mackenzie Building, and finally to 4905 Dufferin Street. The artifacts of Climatology were increasing with each move – originally there were only document boxes and ledgers, then came publications, punched cards, magnetic tape, microfilm, computers, special shelving, etc. Although many in the audience did not need to be reminded, Mr. Noble mentioned that Mr. Boughner and his baggage were again on the move – as recently as a week earlier Mr. Boughner's office had been moved in connection with the extensive remodelling being undertaken at AES Headquarters.

Mr. Noble related that Mr. Boughner got his first taste of international meteorology in 1947, as a Canadian delegate to the IMO meetings in Toronto and then participated in the following Conference of Directors meeting in Washington. Subsequently

he was a principal delegate at Agricultural Meteorology and Climatology meetings held in Washington, Paris, Warsaw, London, Geneva, Stockholm and Leningrad. In fact he probably logged more miles of international travel on behalf of Canadian meteorology than any other AES employee. From an international viewpoint, Mr. Boughner's greatest honour came in 1967-70 when he was named to be the representative of the Technical Commissions on a WMO Panel of Experts created to advise on the revamping of the structure of the organization.

Never directly active in computer work, it is sometimes forgotten that Mr. Boughner was the Canadian pioneer in modern methods of climatic data handling. Beginning in 1949, when he inspected U.S. installations and methods at Albany, N.Y., New Orleans and Washington, Mr. Boughner directed every step of the organization's progress in punch card and then computer methods. Mr. Noble traced the developments in Canadian climatology over the past 40 years showing how Mr. Boughner had been primarily responsible for the extensive services now being supplied not only in climatology but also in so many aspects of applied meteorology and climatology. He also pointed out that Mr. Boughner, when he became Director-General of the new Central Services Directorate, took on responsibility for Training and Ice. Finally, the Assistant Deputy Minister thanked Mr. Boughner for his personal support over the years, wished him health and happiness in the years ahead, and urged him not to forget that he would be always a welcome visitor at AES Headquarters.

HIGH WATER LEVELS - LAKE ST. CLAIR

There has been a great deal of concern over high water levels in the Great Lakes system recently, but it is sometimes difficult to understand this concern when one lives in a high rise and travels to and from work by subway.

These photographs were taken at Mitchell Bay on Lake St. Clair on June 29, 1973.





The Windsor Weather Office recorded 5.81 inches of rain during June, 1973. The normal is 3.29 inches and the record rainfall for June is 6.38 inches, occurring in 1960.

THE SUMMER SOLSTICE

By K.J. Clarke

During the past six months, Yukoners, as all peoples of the far North around the Arctic, have looked forward to longer and longer hours of daylight and have watched the sun's arc become progressively higher in the sky. Those dim winter days when the sun just barely got up over the southern horizon at noon seem like distant memories at this time of the year, as we approach the summer solstice, the longest day of the year.

At precisely 12:01 a.m., June 21st, the sun will be directly over the tropic of Cancer, or more exactly, the earth will have revolved around the sun such as to allow the northern hemisphere to have reached its maximum tilt towards the sun. The tilt of the earth is that angle its spinning axis makes with the vertical of the plane of revolution around the sun. The earth's axis is fixed in space, the north end always pointing to the north star, much like a spinning top would be, if it were always tilted towards one wall while revolving around some point on the floor. This angle of "tilt" is about $23\frac{1}{2}$ degrees, and is the "magic angle" that gives us our seasons.

Half of the globe is in sunlight and half in darkness at any instant. As our planet has revolved around the sun, during the course of the last six months the north pole which was tilted into the shadow side, has gradually emerged into the sunlight. On December 21st, the shortest day of the year, the north pole was tilted $23\frac{1}{2}$ degrees away from the sun into the shadow area, or some 1500 miles into darkness. The remainder of the Arctic within 1500 miles of the pole never sees the sun this day, but there is a point far enough south where the land just emerges into sunlight at noon, and this distance from the pole running around the globe is known as the Arctic Circle.

In the Yukon, the Arctic Circle runs east-west some 180 miles north of Dawson City.

Let's go back to the that dim day of December 21st, in the Yukon. If you happened to be on the Arctic Circle that day, you would have been waiting patiently all morning for the sunrise. You would only have seen it momentarily at noon, and by then it was sunset already! Further south at Dawson City, the sun shone about four hours and rose only about three degrees above the southern horizon at noon, while in Whitehorse we had a five and a half hour day, with the sun about six degrees over the horizon. One would have to travel way South past the equator to the Tropic of Capricorn before the sun would have been overhead at noon. On the other side of the Arctic Circle, at about 75 miles, Old Crow never did see the sun that day, although twilight was certainly bright enough to see around noon. Indeed, twilight is visible at noon for some 300 or 400 miles north of the Arctic Circle, but beyond that in the "High Arctic" the 21st of December is always pretty black!

As the earth continued to revolve around the sun this spring, the North Pole moved closer to the edge of the shadow, while at the same time the South Pole, which has been in continuous sunlight was also nearing the dark half of the earth. At one point, both poles were exactly on the edge of light and dark, and this was around March 21st. We call this the equinox, when the entire world receives an equal 12 hour day and the sun is directly over the equator.

Since the equinox, or what we label as the first day of the spring season, the North Pole has been tilting ever more into sunlight, and the days have been getting progressively longer, as much as six minutes each successive day in Whitehorse! That portion of the Arctic in perpetual daylight has grown in size until June 21, all places north of the Arctic Circle will not see the sun set at all, and for anyone south of this line, the night will be longer the further south they are situated. In other words, the length of daylight we experienced in winter is now the length of night that occurs in summer.

At Old Crow, the sun has not set since the first week of June, and will not set again until about the second of July.

And after June 21? Well for one thing the light bill will be getting bigger, as our days now become shorter, and the stars will soon enough tumble out "neck and crop" and the moon be "awful clear" over the Yukon, as the north plunges back into darkness, in the next six months.

PERSONNEL

June, 1973

The following transfers took place:

M.M. Horita	From: M.Sc. U. of Toronto To: Prairie Weather Central
F.J. Herfst	From: M.Sc. U. of Toronto To: Prairie Weather Central
K.M. MacDonald	From: CFB Shearwater To: Metoc Centre, Halifax
S.J. Siok	From: School of Meteorology, Trenton To: Weather Office, Montreal
D.F. Cameron	From: CFB Bagotville To: 22 NRWC
M.L. Berry	From: Arctic Weather Central To: CSD AES HQ, Downsview

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

73-DOE-ONT-CC-103	Meteorology MT6 Meteorological/Oceanographic Supervisor Canadian Forces Metoc Centre, Halifax K.M. MacDonald
72-AES-CC-288	Meteorology MT9 Regional Superintendent General Weather Services Central Region HQ, Winnipeg E.H.V. Dexter
73-DOE-ONT-CC-94	Meteorology Canadian Forces (Sea Element) R.L. Jones
72-AES-CC-283	Bilingual Electronics Instructor EL5 AES Headquarters, Downsview R.V. Quick
72-AES-CC-352	Technical Writer, Manuals, EG-ESS6 AES Headquarters, Downsview J.M.L. Berthelot

Retirements:

C.C. Boughner
Director-General
Central Service Directorate
AES HQ, Downsview

A.M. Crocker
Chief, Professional Training Division
Central Services Directorate
AES HQ, Downsview

F.J. Mahaffy
Head, Economic Development Weather Services
Field Services Directorate
AES HQ, Downsview

PERSONNEL – ONTARIO REGION

Transfers

Andy Radomski	From: Presentation Course To: Windsor Weather Office
Don Gullett	From: Windsor Weather Office To: Hamilton Weather Office
Ron Poulton	From: Toronto Weather Office To: Toronto Island Weather Office
Vince Odle	From: CMC To: Toronto Weather Office
Marcel Brosseau Nicole Raymond Yves Landry	Recent graduates of the first French language Basic Met. Course at A.S.T.S. Posted to the Ottawa Weather Office.

STAFFING OF THE WEATHER STATION, NEW TORONTO INT'L AIRPORT

Dave Law	From	Moosonee Weather Station
Steve Regan	"	Toronto Weather Office
Don Adams	"	Ontario Science Centre
Bob Reimer	"	Toronto Weather Office
Ken Woods	"	Toronto Weather Office

OTHER EVENTS

LONG SERVICE AWARD – TED MARTYN

Ted was born and educated in London, Ontario. He joined the army early in 1945 and was discharged in December. In June 1948 he enlisted in the Air Force as an administration clerk. After six months he began meteorological training and was making \$60.00 a month with room and board.

Ted worked at various locations throughout Canada: Centralia, Churchill for 3 years, Gimli for 7 years and Winnipeg. In May of 1968 he joined the A.E.S. and his experience has made him a valuable member of the Weather Office Windsor staff.

On June 28, 1973, Don Ross presented Ted with a pin and a certificate to mark his 25 years of service to Canada – 25 years of undetected crime says Ted.

Ted's plans centre around his work, a recently purchased house in a co-op development and enjoying his two grandchildren. He leads a quiet life but likes bowling and has been known to visit the track upon occasion.



Long Service Award presented by D.S. Ross RSGWS Ontario Region (Left) to Ted Martyn (Right).

SUGGESTION AWARD

Mr. L.W. Johnson Administrative Assistant in the Weather Office, Edmonton, suggested that Mr. R. Hornstein's "Meet Your Weatherman" series should be published in book form. His award of \$150.00 was presented by Mr. G.H. Legg, Regional Director, at a gathering held in the AES Offices at Edmonton International Airport.



PRESENTATION OF SUGGESTION AWARD

*Left to Right: A.S. Mann, L.W. Johnson, D.B. Fraser, S. Checkwitch,
G.H. Legg.*

TRIVIA

Test Your Understanding of French. See if You can Follow These Directions in three Minutes!

Pouvez-vous suivre ces directives?

- 1) Lisez d'abord tout avant de faire quoi que ce soit.
- 2) Mettez votre nom dans le coin gauche de cette feuille.
- 3) Encerclez le mot "non" de la deuxième phrase.
- 4) Faites 5 petits carreaux dans le coin droit en haut de cette feuille.
- 5) Mettez un "X" dans chaque carreau.
- 6) Signez votre nom sous le titre.
- 7) Dessinez un cercle en dessous de votre prénom.
- 8) Après le titre, écrivez "non, non, non".
- 9) Encerclez chaque mot dans la phrase six.
- 10) En bas, au coin gauche, faites un grand "X".
- 11) Encerclez le "X" que vous venez de faire.
- 12) Sur le dos de cette feuille, multipliez 3×58403 .
- 13) Encadrez le mot "carreaux" dans la phrase 4.
- 14) Arrivé à ce point, criez votre prénom.
- 15) Si vous pensez d'avoir suivi les directives jusqu'ici, criez: "Oui, bien sûr! "
- 16) Sur le dos de cette feuille, additionnez: $357 + 48 + 86$.
- 17) Encerclez votre réponse.
- 18) Encadrez ce cercle.
- 19) Comptez, en voix normal, de 1 à 10.
- 20) Après avoir lu cette page bien attentivement, répondez seulement aux questions numéro un et deux.

* * * * *

Office Stimuli Certainly Reveal the Pecking Order

By R.L. O'Brien - Toronto Globe & Mail

May 7, 1973

Dear Mr. Armstrong:

I was delighted with our meeting the other day and your decision to convert your company from open-plan back to "old-fashioned walls and doors," as you put it. We are doubly delighted that you have chosen our firm to act as interior design motivation consultants.

There is no point in debating the pros and cons of open-plan; just let me say that after 20 years in the office-design field, I am convinced that walls, desks, windows, rugs, etc., offer fantastic opportunities to reward, motivate and grease the wheels of employee greed and ambition. Not to be passed up by an alert management. You, of course, are starting with almost nothing - just some screens and potted plants - so you can design the ideal working plan.

As a guide to planning, here are my thoughts on the current state of office status symbols. As you would hope, the pecking order is flourishing.

First comes the office with partitions, then with walls to the ceiling, then with a window, then a bigger window, then a corner office. The size is always critical.

(Keep your eye on the man who strolls into the office of a co-worker, slumps low in a chair and gazes heavenward. He's not thinking - he's counting the ceiling tiles. A fast way to see who rates what.)

While traditional rewards are still popular - big desks, rugs, side-units, fish-net drapes, telephone buttons, potted plants - some new office stimuli (as we call them) have come along recently. Coffee mugs for example. As an award after five years of service, this is proving to be a first-rate item to stimulate loyalty and the competitive spirit. Recommended is pewter, suitably engraved, and an in-office presentation. (If this costs too much, consider after 10 years.) The Electric typewriter with interchangeable ball is now an effective motivator at the secretarial level. Also the electric pencil sharpener.

The art-ecology markets are flourishing. As you know there's a big swing to things cultural and natural. The bright abstract painting (it doesn't have to be expensive, large or even good - just signed) is working well for a number of companies, particularly with young executives. It now ranks ahead of the three-seater couch.

One exciting new idea is tropical fish. Look for those who seem to be beyond responding to a rubber plant; a small tank set up with a pair of fancy guppies might be perfect.

Just a quick mention of items that are out: brass nameplates, deskclamps, venetian blinds. All are negative stimuli.

You now have a golden opportunity to assess your people and inform them of that assessment without really saying a word. Just assign offices, furniture and accessories on the basis of past performance and future potential. (It can be cheaper than money.)

Before we get together again I'll try to find (1) a young abstract artist who might give you a quantity discount, and (2) the going price for fancy guppies.

Regards,

Joe T.

AES CENTENNIAL MEDAL

If you are the owner of a gold AES centennial medal you will be pleased to know that Wellings Mint has informed us that the gold medal is now a collector's item and is valued at something over \$400. The purchase price one year ago was \$150.

The silver medal, over the same period, has doubled in value.