



# ZEPHYR

FEBRUARY 1974 FEVRIER



Environment  
Canada

Environnement  
Canada

Atmospheric  
Environment

Environnement  
atmosphérique

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## INTERNATIONAL EXPERTS MEET AT VICTORIA HARBOUR

The small community of Victoria Harbour located on the shores of Georgian Bay, 90 miles north of Toronto was the setting for a unique international event from January 29 to February 8. Over 30 scientists and environmental experts from 15 countries were brought together to write a book amid the snow and clear air of a Canadian winter.



Front Row Left: Right kneeling: *Dr. D.P. McIntyre, (Canada); Prof. Dr. O. Soemarwoto, (Indonesia); Prof. Y. Shimazu, (Japan); Dr. D. Poore, (United Kingdom);*  
Second Row Left-Right: *Dr. A. Khosla, (India); Mr. G.A. McKay, (Canada); Mr. J. N.R. Jeffers, (United Kingdom); Miss K.A. Bishop, (Canada); Dr. A. Mironov, (U.S.A.); Miss M.A. Simonetta, (Canada); Dr. P. Olindo, (Kenya); Prof. J.E. Dooley, (Canada); Dr. D.W. Gallop, (Argentina); Mrs. R. Paradinas, (Spain); Dr. R. Paradinas, (Spain); Dr. P. Duffy, (Canada);*  
Back Row Left-Right: *Mr. C.S. Alexander, (Canada); Dr. R.E. Munn, (Canada); Dr. J.E. Gross, (U.S.A.); Dr. X. DE Maere, (Belgium); Miss S. Staynes, (United Kingdom); Dr. C.J. Kerby, (U.S.A.); Prof. C.S. Holling, (Austria); Dr. A.A. Marsan, (Canada); Dr. F. Fenner, (U.S.A.); Dr. D.W. Goodall, (U.S.A.); Dr. M. Hadley, (France); Dr. A. Colman, (U.S.A.); Dr. J.H. Steele, (United Kingdom); Dr. J. Rabinovich, (Venezuela).*

The official name of the meeting was the Workshop on Impact Studies in the Environment (WISE). The Workshop was co-sponsored by the U.N. Environmental Program; Environment Canada and UNESCO.

Dr. R.E. (Ted) Munn, Chief Scientist with the AES's Air Quality Branch was co-chairman of the Workshop. The AES was also represented by Mr. Gord McKay and a group of dedicated "workers" who were able to keep things running smoothly. This group consisted of Dr. A. Chisholm (Victoria Harbour – Toronto Shuttle Service), Dr. J. McTaggart-Cowan (would you believe 25 M sheets of photocopy paper? ) and Misses Ann Bishop, and Mary Anne Simonetta who typed and typed and . . . typed.

In Dr. Munn's estimation, the book on Environmental Impact Studies which was produced is the most important work on the environment within the past decade. The visitors to Canada, many of whom came from warmer climates such as Indonesia and Kenya, were favourably impressed with both the countryside and the arrangements made for the Workshop. Although, the work schedule was tiring and allowed for little relaxation, trips were arranged to Niagara Falls and to Sainte-Marie-Among-the-Hurons in nearby Midland. Much of the credit for the success of the Workshop was due to the fine facilities provided by the Sportmans Motor Inn in Victoria Harbour and the cheerful presence of the owners and hosts – Jim and Carol Ashworth.



*Co-Chairmen, Doctors Munn and Frenkiel at close of Workshop.*

## A BIBLIOGRAPHY OF CANADIAN CLIMATE 1958-1971

Do you want to know what has been written about the climate of Canada? Do you want to read articles on agricultural meteorology, the diurnal variation of temperature, hydro-meteorology, local climates, snow cover, urban climates? The second issue of the Bibliography of Canadian Climate listing books, articles, papers, reports, etc., published over the period 1958 to 1971 has just been issued. Although copies have been distributed throughout the Service, it is possible that some may not yet have seen the publication. If you would like a copy of this 170-page bilingual book, it is suggested that you either contact your Regional Office through normal channels or write directly to the Meteorological Applications Branch at AES Headquarters

### AES FILM

A new film on the work of the Atmospheric Environment Service has been approved. The film to be produced for the AES by the National Film Board will concentrate on the application of weather information to the lives and livelihoods of Canadians. The film will use dramatic and visual effects to show the relationship of weather and climate to agriculture, transportation and environmental studies. Both French and English versions are planned.

The film is being produced by Mr. Desmond Dew, a veteran film maker, who was project manager for LABYRINTH at EXPO '67 and will be directed by Mr. Bernard Devlin, who has to his credit many of the NFB's best-known productions. The shooting on the film is expected to begin immediately. Mr. R.A. Miller, of the Information Services Office, is the AES's liaison man on the project.

## LE SYSTÈME MÉTRIQUE ET LES PRÉVISIONS MÉTÉOROLOGIQUES

par N.N. Powe

La première fois que vous compterez aller nager au cours de l'été 1975 et que vous entendrez prévoir une température d'environ 25 degrés, vous aurez peut-être un choc.

Et il faudra sans doute beaucoup d'efforts pour s'habituer à des prévisions qui annoncent régulièrement, dès fin novembre et durant tout l'hiver, des températures maximales au-dessous de zéro.

Il faudra de même un certain temps pour réagir avec détachement à des prévisions qui signalent des températures minimales de -25, comme cela aurait été le cas à la fin de la semaine dernière, si le Canada, à la suite de l'Australie et de la Nouvelle-Zélande, avait adopté le système métrique en janvier

Il s'agit de températures exprimées en degrés Celsius (centigrades) déjà en usage dans tous les continents, Amérique du Nord exceptée.

Ceux qui ont quitté l'école depuis longtemps ne connaissent peut-être pas le terme Celsius.

C'est là un mot qui a été accepté sur le plan international lors d'une conférence tenue en 1948 pour remplacer le mot centigrade appliqué aux températures.

Le dernier terme est ambigu, car on s'en sert dans le domaine technique pour la mesure des angles.

D'après le plan actuel, les météorologues du Service de l'Environnement atmosphérique seront tenus, au printemps de 1975, de relever et de prévoir les températures en degrés Celsius.

Dans l'échelle Celsius, le point de congélation (32 degrés) est 0°C. Le point d'ébullition de l'eau (212°F) est de 100°C; soit un rapport de cinq degrés Celsius pour neuf degrés Fahrenheit.

Ainsi, 25°C correspond à 77°F, température à peu près normale pour un bel après-midi ensoleillé de juillet.

Une température au-dessous de zéro degré Celsius se situe au-dessous du point de congélation; elle peut donc se manifester dès novembre.

A la fin de la semaine dernière, on avait prévu une température minimale voisine de -15 degrés Fahrenheit, soit environ de -25 à -27 degrés Celsius.

L'expression bien connue "au-dessous de zéro" risque d'être délaissée au profit de "au-dessous du point de congélation".

L'usage du degré Celsius comme unité de température présente toutefois un inconvénient. Un degré Celsius vaut en effet près de deux degrés Fahrenheit et, de ce fait, si l'on ne recourt pas aux décimales, le relevé des températures perd en précision.

L'introduction du système métrique à des fins d'observation météorologiques va entraîner un autre changement, cette fois-ci dans le relevé des accumulations de pluie et de neige, qu'on entend mesurer respectivement en millimètres et en centimètres.

A cet effet, les échelles retenues garantiront la précision voulue.

Un millimètre égale environ 0.04 pouce: 25 millimètres égalent environ un pouce. En janvier, il y a eu par exemple 1.27 pouce de pluie, soit 32 millimètres. Il y a eu en outre 14.9 pouces de neige, soit 38 centimètres.

Tout le monde a entendu exprimer la vitesse du vent en milles à l'heure ou en noeuds.

On s'est traditionnellement servi de noeuds et de milles marins à l'heure pour la marine et l'on a en général adopté ces unités pour la navigation aérienne.

Il semble bien y avoir peu d'empressement à passer aux unités du système métrique mais, à la longue, on s'attend à leur adoption universelle par la marine et l'aviation

Dans le domaine de l'automobile, on parlera probablement en 1977 de kilomètres à l'heure.

On modifiera les compteurs de vitesse et les panneaux de signalisation pour tenir compte des nouvelles unités.

A ce moment-là, les bureaux météorologiques commenceront à communiquer et à prévoir la vitesse du vent en kilomètres à l'heure.

Ainsi exprimées, les mesures sont moins précises; communiqués et prévisions auront tout lieu de paraître plus inquiétants. 20 mi/h équivalent par exemple à 32 km/h. Un ouragan de 75 mi/h deviendra animé d'une vitesse de 120 km/h.

On sait par expérience que l'homme répugne à changer ses habitudes.

A l'introduction des nouvelles unités, on donnera aussi les anciennes pour en permettre la comparaison et pour donner au public la possibilité de s'y accoutumer.

Dans la pratique, le service météorologique délaissera toutefois les anciennes unités dans l'année suivant l'adoption du système métrique.

Le météorologue sait d'expérience le peu d'empressement que montre le profane à accepter, en dépit de leur bien-fondé, de nouvelles unités de mesures.

Mesurer la pression atmosphérique par le biais d'une unité de longueur procède d'une démarche fort peu scientifique. C'est pourquoi, à la fin des années 20, les météorologues ont décidé de substituer le millibar au pouce comme unité de pression.

La pression se mesure d'ordinaire en millibars; les cartes du temps se pointent toutes en cette unité.

N'empêche qu'à la radio et à la télévision les bulletins ou les prévisions météorologiques donnent la pression en pouces, car les gens consultent encore chez eux des baromètres gradués en pouces et non pas en millibars.

Le passage à un système uniforme et rationnel de mesures ne réussira qu'autant que le public canadien adhérera au système métrique, comme la plupart des autres pays du monde l'ont fait ou le feront dans les années à venir.

## WHY CELSIUS?

by C.H. Sutherland

As late as the eighteenth century a satisfactory thermometer had yet to be developed despite the fact that many scientists had experimented with methods of measuring heat.

One of the vexatious problems in thermometry was the establishment of a scale which would be acceptable to most and, in particular, to the scientific world. A professor of Astronomy at Uppsala University – Professor Anders Celsius – spent much time in working on the problem. He improved a thermometer introduced by two French brothers named Delisle, and used a 100-degree scale based on the freezing and boiling points of water. He described his studies to the Swedish Academy of Science and his thermometer found favour with most scientists of the day. His protégé, Linnaeus, the famed Swedish botanist, made a significant change shortly after Celsius died in 1744 – he inverted the scale, for Celsius had used zero as the boiling point of water and on a hundred degrees as the freezing point. Then the thermometer devised by the Delisles, and improved by Celsius and Linnaeus became known as the centigrade thermometer and its use spread throughout the World as an accurate, convenient, and acceptable instrument.

The metric system was one of the reforms that the Revolutionary National Assembly had introduced into France in 1790. It was only natural that the centigrade scale, with one hundred degrees ~~base~~, fitted into the decimal aspect of the metric system and it was incorporated into the system in 1794. Britain and the United States were invited to consider and concur with the use of these natural units of measurement at that time but did not act and only now, almost two centuries later, are moving to metric conversion.

An international body, La Conférence Générale des Poids et Mesures (CGPM), has the responsibility for considering all metric units, redefining where necessary, and evolving the most practical unit system possible. Canada supports the findings and recommendations of the CGPM. The Conference considered the centigrade degree in 1948 and found that it was sometimes confused with an angular measure of the same name. From three names submitted, viz; centesimal, centigrade, and Celsius, it selected the term Celsius to be the official name relating to degree intervals of what had been known as the centigrade thermometer. Thus the Committee honored the work of a scientist who contributed much to the development of a practical and acceptable thermometer.

While many Canadians were taught and have been accustomed to use the term "centigrade" they are now finding, as Canada moves to Metric Conversion that the word "Celsius" applied to degrees is to be used – and not "centigrade."



## POURQUOI CELSIUS?

par C.H. Sutherland

Au dix-huitième siècle, il restait encore à concevoir un thermomètre satisfaisant, en dépit du fait que de nombreux savants avaient expérimenté des méthodes de mesure de la chaleur.

L'un des problèmes les plus épineux de la thermométrie était alors de constituer une échelle acceptable à la plupart et, en particulier, au monde scientifique. Anders Celsius, professeur d'astronomie à l'Université d'Uppsala, consacra beaucoup de temps à cette question. En recourant à une échelle de 100 degrés établie d'après les points de congélation et d'ébullition de l'eau, il perfectionna le thermomètre qu'avaient imaginé deux Français, les frères Delisle. Il présenta à l'Académie suédoise des Sciences une description de ses études. La plupart des scientifiques du moment firent bon accueil à son thermomètre. Peu après la mort de Celsius en 1744, son protégé, le célèbre botaniste suédois Linné, apporta au thermomètre une modification importante: l'inversion de l'échelle. Celsius avait en effet pris zéro pour point d'ébullition de l'eau et 100 degrés pour point de congélation. Inventé par les Delisle et perfectionné par Celsius et Linné, ce thermomètre fut d'abord connu sous le nom de thermomètre centigrade. Instrument précis, pratique et acceptable, son usage s'est étendu dans le monde entier.

Entre autres réformes, l'Assemblée nationale révolutionnaire introduisit en 1790 le système métrique en France. Il allait de soi que l'échelle centigrade, avec ses 100 degrés, s'adaptait au caractère décimal du système métrique dans lequel on l'a insérée en 1794. On avait invité à l'époque la Grande-Bretagne et les Etats-Unis à envisager l'usage de ces unités naturelles de mesure, à les adopter. Ces pays ne prirent alors aucune initiative dans ce domaine et c'est aujourd'hui seulement, près de deux siècles plus tard, qu'ils s'orientent vers le système métrique.

Une institution internationale, La Conférence Générale des Poids et Mesures (CGPM), est chargée d'étudier les unités du système métrique dans leur ensemble, de les définir à nouveau en cas de nécessité, d'élaborer les systèmes les plus pratiques possibles. Le Canada adhère aux conclusions et aux recommandations de la CGPM. La Conférence a étudié en 1948 la question du degré centigrade et s'est aperçue qu'on le confondait parfois avec la mesure d'angle du même nom. Des trois termes proposés, soit centésimal, centigrade et Celsius, elle a retenu le dernier pour la désignation officielle des degrés du thermomètre dit centigrade. Le comité a ainsi honoré l'oeuvre d'un savant dont les travaux ont contribué de beaucoup à la mise au point d'un thermomètre commode et acceptable.

On avait appris aux Canadiens le terme de "centigrade" et on les avait habitués à s'en servir. Mais maintenant que le Canada va adopter le système métrique, ils découvrent qu'il faut employer le mot "Celsius", et non pas "centigrade".

## AOTC FORMERLY UATS Née RTS

Training of observers to man our national Upper Air Network has progressed and expanded quickly in the past thirty years and with progress came changes of names. Just prior to 1959 training was done at the Radiosonde Training School at Edmonton and the Radiosonde Training Station on Hanlan's Point, Toronto Islands. These two schools were combined to form a single national school at Hanlan's Point in 1959 and later in the year moved to the present site in Scarborough with the name Radiosonde Training School. Up to that time, and on to May 1972, the school was the responsibility of the Basic Weather Division of the Meteorological Branch. With an internal reorganization in Basic Weather Division in 1962, the term Upper Air was introduced to describe our national network taking atmospheric soundings and the school was renamed the Upper Air Training School.

The latest turn of events started with the general reorganization of the Department of the Environment which saw Meteorological Branch become the Atmospheric Environment Service, Basic Weather Division disappeared and the responsibility of the Upper Air Training School moved to Training Branch. A broader training responsibility is foreseen at the school now and to reflect this a new name has been selected. Effective 1 March 1974 the Upper Air Training School was renamed the "Aerological Observers Training Centre".

### THE A.E.S. PLAYS HOST TO AGROMETEOROLOGICAL COMMITTEE - REPORT ON THE 15th ANNUAL MEETING, C.C.A.M.

During the first week in February, the A.E.S. was host to the Committee on Agricultural Meteorology, an advisory body of the Canadian Agricultural Services Coordinating Committee which is chaired by the Federal Deputy Minister of Agriculture, and among the committee members are the Provincial Deputy Ministers.

The C.C.A.M. meets annually; every other year the meeting takes place in Ottawa and is then hosted by the C.D.A.; in between the invitations from other institutions or agencies are accepted. This year, for the first time in 15 years, the A.E.S. was host on an invitation issued by Mr. C.C. Boughner, now retired. Dr. Treidl made the physical arrangements and after the session conducted the members of the committee on a tour of the building. They appeared to be really impressed.

Mr. Noble gave the welcoming address and stressed the increasing importance of agrometeorology at a time when food production on a world-wide scale is struggling to feed the ever increasing population.

One way to foster agrometeorology is to establish provincial committees which can provide an important link between meteorologists and climatologists on the one hand and agricultural experts on the other. Through the initiative of C.C.A.M. several such committees are now in existence.

One of the roles of the C.C.A.M. is maintaining an awareness of, and reporting on, the needs of Canadian agriculture. This is usually done by surveys which involve both provincial and federal expertise, and which direct the attention of provincial experts towards application of methods already developed and research yet to be done. Furthermore it provides liaison by assessing regional problems and recommending possible solutions to its parent committee.

At the present annual meeting, the problems that were considered to have a significant meteorological input, included:

- Harvesting Operations in General
- Pest and Disease Control
- Soil Water Management
- Specialized Weather Forecasting
- Crop Yield Predictions and
- The Ecosystem Approach to solving agricultural problems.

During these deliberations it became again clear how important the role of the A.E.S. is in these endeavours, not only as catalyst for the organization of activities on the national and provincial levels but also as the agency gathering the basic data which is fundamental to the solution of these and other agricultural problems.

All participants recognized that a number of important scientific applications are made in an area considered heretofore sort of as an interdisciplinary no man's land, removed from the heartland of both sciences. Basic research is fundamental to all applications but if knowledge so acquired is not used, research is sterile. There is an urgent need to apply meteorology where it can do the most good to our society. The present food crisis offers such a challenge.

The chairman of C.C.A.M. is Dr. W.S. Ferguson and Dr. W. Baier is secretary, both are with the C.D.A. at Ottawa. The members serve three years each and there is one representing each province, but at present, one only comes from the Maritimes. Dr. R.A. Treidl is a permanent member representing the A.E.S. Dr. R.H. Douglas, former meteorologist with the A.E.S., now a professor in agricultural physics on the MacDonald Campus of McGill, is another permanent member.

## **FREEZING SPRAY AT POINT PELEE, ONTARIO**

by Keith Berry

The awesome result of strong easterly winds, high Lake Erie water levels, and below freezing air temperatures were caught on film by one of the Ontario Regional Inspectors. As if the shoreline has not suffered enough from repeated flooding throughout the past year, now the burden of ice is applied. The photographs were taken February 5, 1974 during an appraisal trip for a climate station.



## DR. B.J. MASON

Dr. Basil John Mason, the Director-General of the Meteorological Office received the Glazebrook medal and prize for his contributions to numerical methods of weather forecasting by computer and for his success in encouraging the scientific spirit within the Meteorological Office.

Dr. Mason was born on 18 August 1923 and studied at Nottingham University. He lectured in Meteorology at the Imperial College, London, for some years, and during 1961-65 he held the chair in Cloud Physics there. He gained his present position in 1965 and was President of the Royal Meteorological Society during 1968-70. Since 1971 he has been Chairman of the Council of the University of Surrey. Amongst other awards he received the Charles Cree medal and prize in 1965.

Dr. Mason is well known at AES Headquarters where he delivered an outstanding lecture on Physics of Cloud and Precipitation on the occasion of our Symposium celebrating the centenary of the Meteorological Service as a Federal Agency.

## PERSONNEL

The following transfers took place:

Y.G. Ishii	From: Toronto Weather Office To: FSD AES Headquarters, Downsview
G.F. Piette	From: CMC, Montreal To: Quebec Regional Headquarters

The following are on temporary duty or project assignment:

H.M. Hacksley	From: Regina Weather Office To: FSD AES Headquarters, Downsview
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The following have accepted positions as a result of competition:

72-AES-CC-338	Meteorology MT 5 Supervising Forecaster Weather Office Edmonton L.R. Legal
73-DOE-TOR-CC-290	Meteorology Major Canadian Forces - Air Element Canadian Forces Weather Services J. B. Elliot D.J. Webster

73-DOE-TOR-CC-297

Meteorology MT 10  
Chief, Professional Development Division  
AES Headquarters, Downsview  
A.F. Davies



*K.L. Leek, OIC Torbay UAS (left), K.F. Harry, Atlantic Regional Director (centre), and F. Rowe, OIC St. John's WO (right) during presentation of Suggestion Award to K.L. Leek.*

**Chief, Dynamic Prediction Research Division**

Dr. André Robert formerly Chief of the Dynamic Prediction Research Division, has accepted the position as Director, Canadian Meteorological Centre. Dr. Robert assumed the duties of the position, effective March 4, 1974

**TRIVIA**

**Deft Definition**

expert – X-Spurt  
or  
X-the unknown Quantity  
Spurt-a drip under pressure