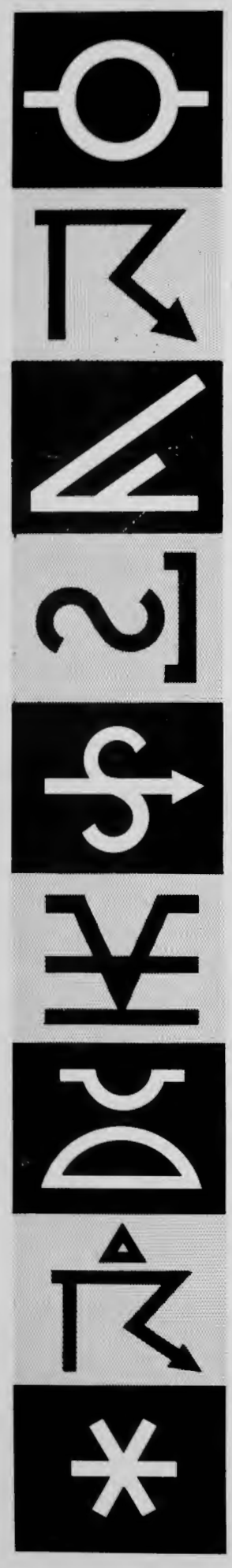

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ICE CENTRAL'S MOVE TO OTTAWA

The role which the Ice Forecasting Central fills in the Atmospheric Environment Service program has, perhaps, never been fully explained to many of our colleagues in AES. Therefore the occasion of the transfer of the office from Halifax to Ottawa presents an excellent opportunity to provide this, as well as to indicate some of the reasons for the move.

The functions of the Ice Central are:

1. to provide ice information and forecasts in direct support of marine and fishing operations in waters where ice poses navigational problems;
2. to operate and maintain a real-time ice information service in Canadian waters, and also within Canada's area of responsibility as defined by WMO;
3. to provide advice on the availability, use and interpretation of ice information to government departments, to commercial users, and through international exchanges of data to foreign agencies which are ice oriented;
4. to cooperate through WMO with other nations in the development of internationally acceptable terms and charting procedures which will eliminate language problems arising from marine transportation in ice congested areas.

Through the period from about 1940 until the late 1950's the Marine Branch Department of Transport, maintained a rudimentary surveillance and advisory service through Cabot Strait and the Gulf "from the beginning of the navigation season" until the ice finally melted. During the early 1950's, when the icebreaker "Labrador" was part of the Royal Canadian Navy, an interest in ice and ice forecasting developed within the navy. This interest led to the training of the first Canadian ice observers and forecasters. With the transfer of the "Labrador" to D.O.T. in late 1957, the naval interest in the ice program diminished, and the ice forecasting unit which had been set up at HMCS Shearwater was turned over to D.O.T. in autumn of 1959. The office transferred from Shearwater to space adjacent to the Halifax District Aviation Forecast office, and relied on Rube's communications facilities until the move to Ottawa. Establishing the office in Halifax was done on a 'temporary basis' pending a decision as to the proper location for the ice office. A prime factor in remaining there was the easy access to the radio facsimile broadcast facilities of CFH – the Naval Radio Station – for relaying ice charts to the icebreaker fleet and numerous other ships equipped to copy the broadcasts.

Through the 1960's the number of commercial ships operating in the Gulf and St. Lawrence River on a year-round schedule increased steadily, and D.O.T. ships on resupply missions were no longer the only vessels venturing into the icy Arctic waters. Mineral exploration and, more recently, oil and gas exploration spearheaded a growing presence of commercial shipping which was given at least a psychological boost by the journeys of the Manhattan in both 1969 and 1970.

The increase in shipping in all areas where ice poses navigational problems led to a study in 1969 which proposed a policy for the provision of ice services and information in Canada, and also recommended that the most appropriate location for the Ice Central was Ottawa. The move was accomplished in November 1971.

To a large extent the purpose of the move was to facilitate coordination with M.O.T., Marine Operations, in their direction of the Coast Guard fleet but also to permit a more effective consultation and advisory role in dealing with other government departments which are involved with problems related to ice sensitive activities.

Operationally, on a seasonal basis, ice forecast and advisory services are provided for the Gulf of St. Lawrence/Newfoundland/Labrador areas from December to June, and for Hudson Bay and the Arctic areas from July to November. During the early years (1958–1969) forecasters from Ice Central established field forecast offices at such locations as Churchill, Frobisher, Cambridge Bay, Resolute and even in Edmonton. The field office concept was to supply close support to marine operations in the Arctic.

From 1970 onward the field office concept was eliminated and, through more efficient communications networks, all relays of ice charts and forecasts were made from Halifax. For radio facsimile transmission of ice charts from Ottawa it is now necessary to pass – via broad band – ice charts to Halifax for broadcast over CFH and to Edmonton for broadcast over VFE.

The principal source of ice data is the reconnaissance flown by AES Ice Observers on a year-round basis, together with reports from ships, shore stations and satellite photo interpretation. Data from American, Danish and other sources are also available in particular areas.

Besides the day to day operational duties another vital part of the office program is in the preparation of a weekly series of historical ice charts for all coastal Canadian waters. From these charts seasonal summaries and analysis of the ice regime in various areas are prepared and published, relating oceanographic factors in each area. These charts also form the basis for developing an ice "data bank", and also the production of ice atlases – the first of which is in the initial stages of preparation. All data is now being microfilmed for safety and space saving reasons.

As we move into the 1970's the ice program is developing in three ways – in area, in the period of coverage and in the depth of knowledge required for guiding the newer developments.

Recent increasing involvement in the Great Lakes and St. Lawrence Seaway adds another dimension to the forecast problem. Freshwater ice and sea ice are two different substances – in nature of formation, chemistry, bearing strength, rheology, etc. Forecasts of growth and decay of freshwater ice require a different theory than that of salt water ice.

Advanced instrumentation for remote sensing of ice parameters in darkness and through cloud by reconnaissance aircraft or by orbiting satellites will provide additional data and enable year-round reconnaissance to be provided. Interpretation of the additional data which will become available, its coordination and dissemination to users, will have to keep pace in order that the greatest economic returns can be realized from the investments in these sophisticated observing aids.

The expanding oil/gas exploration programs are demanding more information in areas which, until recently, had not been regularly observed, particularly during the winter months. Commercially viable "finds" will pose a whole new set of questions relating to transport to markets; ice strengthened ships? pipe lines? submarine carriers? how many of which carrier type? which routes-for economy and safety (including pollution pre-

vention)? the environmental effects of ice in the event of an oil spill? types of drilling platforms in ice covered waters – stationery or semi-submersible? effect of icebergs on drilling rigs, underwater cables, pipelines, etc.

Ice Central is thus faced with the challenge of a further growth in knowledge and service that has arisen because of developments in the nation. The relocation will help in satisfying the need but a substantial amount of work and probably additional staff is involved.

CCGS N.B. McLean with Nanook in tow – Wellington Channel – 22 August 1963.

Helicopter returning from a recco.

NEW ICE CENTRAL – OTTAWA

W.E. Markham OIC

Oil drilling platform.

Laser Profilometer Instrument Panel.

Navigator and Radar Positions on DC-4 Ice Reconnaissance Aircraft.

TORONTO SCIENTIST NAMED WINNER OF PATTERSON MEDAL

Dr. Alan Brewer, Professor of Physics at the University of Toronto was named 1971 winner of the Patterson Medal Award for distinguished service to meteorology in Canada. The award was presented by L.T. Campbell, Director of the Atmospheric Environment Services' Administration Branch on the occasion of a banquet at Edmonton's Royal Glenora Club on the evening of Thursday, June 1. The banquet was held in conjunction with the Sixth Annual Congress of the Canadian Meteorological Society at the University of Alberta from May 31 to June 2.

Dr. Alan Brewer accepting "Patterson Medal".

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

Dr. Brewer had an international reputation for his work on ozone and related airborne and ground equipment prior to moving from Oxford University to the University of Toronto in 1962. On joining the Physics Department of the University of Toronto, he brought a new dimension into the University's interest in meteorology which had not had a full-time professor in the discipline since 1880. Due to Dr. Brewer's efforts over the past decade the University has become committed to excellence in meteorological studies and has expanded its post graduate program to include doctoral level work of high quality.

Professor Brewer was actively involved in the evolution of the Canadian Branch of the Royal Meteorological Society into the Canadian Meteorological Society and served as its first president. He was chairman of the group that wrote "Meteorology and the Atmospheric and Environmental Sciences" which was published as part of "Special Study of Physics in Canada" by the Science Secretariat of the Privy Council Office in 1967. Professor Brewer is President of the International Ozone Commission within the International Union of Geodesy and Geophysics. He continues to contribute in an unique way to the growth of meteorology in Canada and to the growing stature internationally of Canadian meteorology.

After obtaining his BSc from London University in 1936, Dr. Brewer became actively involved in meteorology as a scientific officer with the United Kingdom Meteorological Office from 1937–1946. He obtained his PhD (physics) in 1948 and from 1948 – 1962 was Lecturer and Reader in Meteorology at Oxford prior to taking up his appointment at Toronto.

EVAPOTRANSPIRATION STUDIES

Work continued in the Hydrometeorology and Marine Applications Division on the application of methods for modelling actual evapotranspiration. One project involves the analysis of cover and land form characteristics on a national scale based on grid areas of 10,000 km^2. The grid size is comparable to that employed in experimental NWP models being developed in Canada and the United States and seems appropriate to hydrometeorological studies over major river basins or large regions of Canada. Cover characteristics which are being extracted include % fresh water, % bog, % ice, % sea water, % forest, % crop and grassland and % tundra and rock. Further definition of types is visualized for the forest and crop categories. The average monthly albedo and energy balance by grid areas will be estimated and monthly evapotranspiration models will be adjusted to water balance constraints. One objective is to provide mean annual water balance maps for the IHD Hydrologic Atlas of Canada. The work is being carried out in cooperation with the University of Toronto.

Similar modelling studies are in progress in connection with the Federal-Provincial Okanagan Project and the Canadian portion of the Lake Ontario land basin. In these projects aerial photographs obtained from the National/Photo Library are being used to supplement mapped information in the analysis of cover.

All projects also involve modelling of precipitation and snowpack distributions on the basis of physiographic variations and adjustments for measurement errors.

VISIT OF TECHNICAL EXPERTS FROM FRANCE TO AES HEADQUARTERS

On May 4th of this year a group of technical experts from France paid a visit to the AES Headquarters. The group, consisting of senior experts in communications and space research from both the French government and from industry, were on a 10 day fact finding tour of Canadian government and industrial research facilities.

After an initial welcome to Headquarters by Dr. D.P. McIntyre, Director-General of the Atmospheric Research Directorate, the visitors were given a tour of and briefed concerning the operation of several of the Headquarters meteorological facilities, including the Satellite Data Laboratory, the Meteorological Services Research Branch Regional Forecast Model, and Instrument Branch's new automatic weather reporting system.

In all, the visit was very successful; in fact, the visitors insisted on making a complete tour even when the coordinator for the Department of Communications attempted to omit one of the tour items.

NIAGARA BAR EXPERIMENT (IFYGL)

Three towers and a barge a mile and a half out in Lake Ontario from Niagara-on-the-Lake were the scene of the Niagara Bar Experiment. This intensive study of the air near the water surface involved three research groups from A.E.S. (Boundary Layer, Biometeorology and Air Quality) and a group from Canada Centre for Inland Waters. The objectives of the experiment are to gain a better understanding of the transfers of momentum, heat, water vapour and other gases across the air-water interface and to observe in detail the state of the atmosphere and water surface at that location. The first period of the experiment was conducted in May and other periods will occur in June, August and October. The experiment is part of IFYGL and the experimental output is expected to provide a means of deducing lake evaporation and sensible heat flux as well as wind drag on the surface.

The Boundary Layer Research Division team made measurements of mean wind speed, temperature and vapour pressure at heights of 1, 2, 4, 8 and 11 metres above water level. Gill photo-chopper cup anemometers and wet and dry thermocouples were used. Measurements of the turbulent wind (ultrasonic anemometer), temperature (platinum resistance wire and thermistor) and humidity (Lyman-alpha humidiometer and refractometer) fluctuations were made at 5.7m. An on-line analog computer (fluxatron) calculated the latent and sensible heat fluxes as the data was collected. The other turbulence signals were recorded on an analog tape recorder for later analysis. Net radiation and water surface temperature measurements completed the program.

As an initial attempt at estimating the fluxes of other gases, CO_2 (Biometeorology group) and SO_2 (Air Quality group) concentrations were measured at 2 and 8 m levels from a tower mounted on the barge. These measurements should help to determine the importance of the lake as a source or sink of CO_2 and SO_2.

HELICOPTERS FOR FROST PROTECTION

Frost damage to vineyards and to fruit blossoms in April and May is of considerable concern to the farmers in the fruit growing areas of Southern Ontario as well as to the Ontario Department of Agriculture.

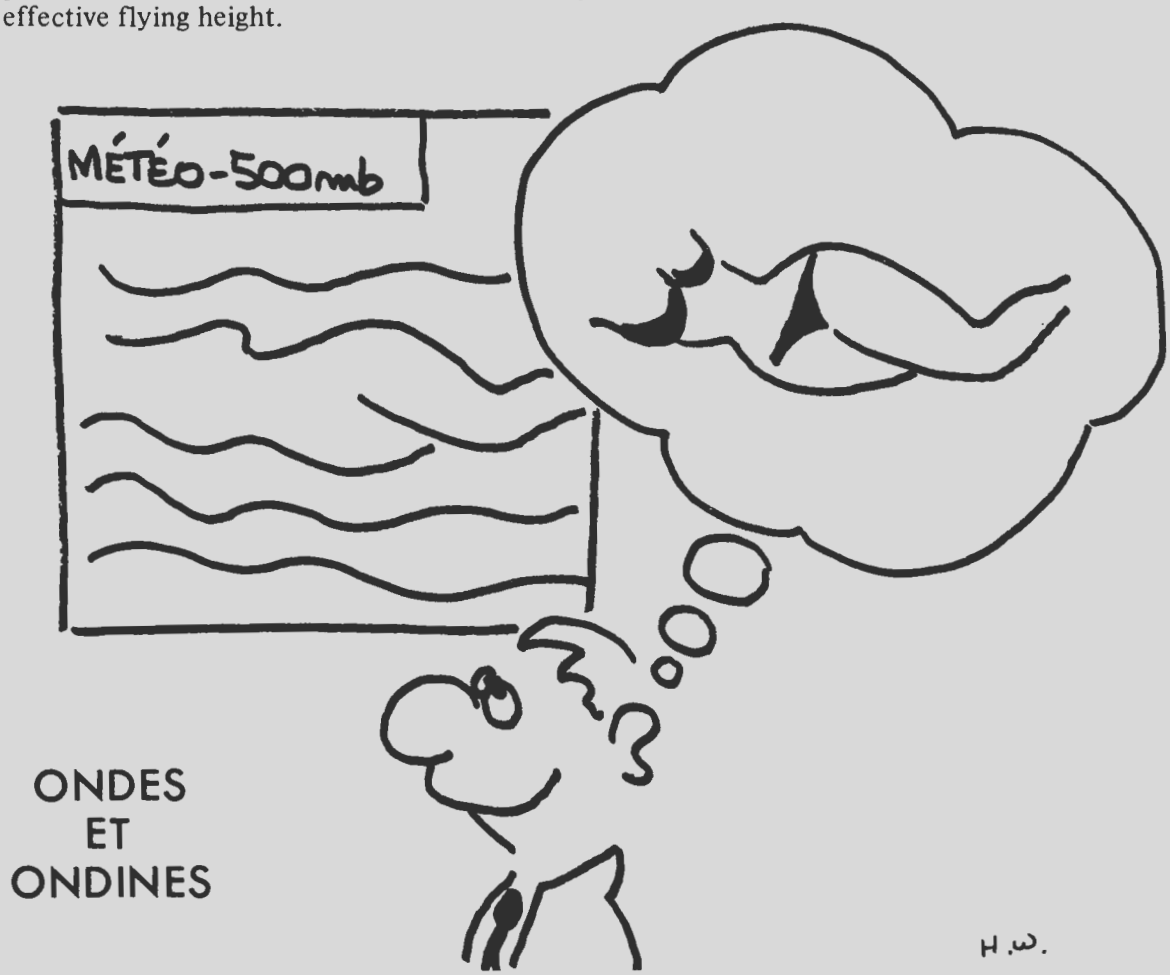
Active methods of radiation frost protection may be achieved by either reducing the amount of heat lost by radiation or by supplying heat immediately before and during the period of actual frost occurrence. The ventilation method, using an aircraft or helicopter to mix cold air near the ground with warmer air from aloft is believed, if found effective, to be less expensive than any other method in areas where frost occurs infrequently.

The Atmospheric Environment Service was requested, and agreed, to collaborate with the Horticultural Institute of Ontario in conducting research on

1. the strength and variability of inversions with distance from Lake Ontario;
2. the effectiveness of mixing air at different levels, and the time interval between mixing and the return of air temperatures to the level observed before mixing;

3. sampling of frost hazard areas in the fruit growing regions.

Three 70 ft. towers were erected by Ontario Department of Agriculture, two on Brights Wines Limited property, E&SE of St. Catharines, and one two miles south of Lake Ontario near the Vineland station. Each tower was instrumented by the Atmospheric Environment Service with aspirated psychrometers measuring dry bulb temperatures at four levels, and with an MSC 45 anemometer measuring wind speed and direction. In addition, three fine thermocouples were installed to measure surface temperatures of the ground and the branches of the vine. Observations started on 26 April 1972 and will continue until the first week of June. Department of Transport permission to fly a helicopter at night has thus far not been granted, and, accordingly, flying has been possible only between dawn and sunrise. On two mornings when meteorological conditions were favourable for the formation of a strong inversion, mixing of cold air near the ground with warmer air from aloft was tried using a helicopter flying backwards and forward above each of the three towers at a height of 100 ft. and at a speed of 40-45 mph. Very encouraging results were obtained. Immediately after mixing, air temperatures near the ground were observed to have risen by as much as the strength of the inversion between 4 and 70 ft. However, due to the short time between dawn and sunrise and the time taken to travel to the various towers, the duration of the effectiveness of mixing the air could not be assessed. It is hoped that after further negotiations between the helicopter company and the Department of Transport, permission may be granted for us to fly at night, although it may be too late this year, and the whole project may have to be repeated next spring particularly in order to determine the most effective flying height.



CHANGEMENT DE CHEF DE SERVICE AU BUREAU METEOROLOGIQUE DE MONTREAL A DORVAL

Monsieur Alcide Ouellet, Chef de service du Bureau météorologique de Montréal depuis près de 6 ans, à été muté au poste de surintendant des services météorologiques au Bureau régional, également à Dorval.

Monsieur Ouellet a fait ses études universitaires en Génie physique à l'Université Laval. Il embrassa par la suite, la carrière de météorologiste, en 1950. Après avoir mérité sa Maîtrise en météorologie, à l'Université de Toronto, il fut affecté au Bureau météorologique de Montréal en 1951. Il a donc accumulé plus de vingt ans d'expérience au Bureau des prévisions, à Dorval. Comme tout le monde le sait, Monsieur Ouellet est très bien connu comme 'vedette' de la radio car il y a près de six ans qu'il participe à un programme radiophonique quotidien 'météorologique' sur un des postes de Montréal.

Pour remplacer Monsieur Ouellet, du moins temporairement, on a choisi monsieur François J. Lemire, qui occupe présentement le poste de surintendant régional des services météorologiques, au Bureau régional.

Monsieur Lemire a fait ses études universitaires à la Faculté des Sciences de l'Université de Montréal. Sa carrière météorologique a débuté en 1956. Après avoir obtenu son diplôme de Maîtrise en météorologie à l'Université de Toronto, en 1957, il fit des stages comme météorologiste-prévisionniste au Bureau météorologique de Montréal, à celui de Goose Bay, au Labrador, au Centre national d'analyse, à Dorval et finalement au défunt Centre d'analyse en haute altitude, également de Dorval. Son expérience comme météorologiste-administrateur commença en 1968 alors qu'il participe au programme de perfectionnement biculturel pour francophones, à Toronto, durant un an. Puis il acquit une expérience précieuse en travaillant environ deux ans à Toronto et à Montréal, pour le Bureau-chef de la Météorologie, sur des projets spéciaux. Il nous est revenu il y a environ un an alors qu'il occupa d'une façon intérimaire, le poste de surintendant régional des services météorologiques.

CHURCHILL HAS

The only seaport on the 3 Prairie Provinces. Last year a record season whereby 26 million bushels of wheat and barley were cleaned and shipped during the 88 day season. This meant the 5 million bushel grain elevator at Churchill was filled and emptied 5 and one fifth times during that period, making it one of the most efficient grain elevator operations in the world, according to the Hon. Donald Jamieson, Minister of Transport.

Churchill is the supply center for the Keewatin Region of the Eastern Arctic – Summer AND Winter. The Eskimo communities of Coral Harbour, Belcher Islands, Whale Cove, Eskimo Point, Chesterfield Inlet, Baker Lake, Rankin Inlet and Repulse Bay are all supplied through Churchill.

Churchill is a Bird Watchers' Paradise: Over 75 species of birds have been identified at Churchill. For 20 years the Audubon Society sent a team to observe birdlife here, from California.

Churchill is noted for its profusion of flowers and other plants, mosses and lichens.

Churchill is noted for its abundance of white whales. The first product exported from Churchill by the Hudson's Bay Company, around 1689, was not fur but casks of whale oil. In recent years, as many as 600 white whales have been taken in a single season.

Churchill has a Tourist Whale Hunting Motel, operated by Indians, Eskimos and Metis, through a Co-operative venture. As far as we know, this is the only one of its kind.

Churchill has a plenitude of Polar Bears. So many in fact, that in the Spring and Fall a 6-man Polar Bear Patrol is hired full time to protect the populace; nuisance bears are air-lifted SOUTH to denning areas; "Polar bear bus runs were instituted this Winter, at Fort Churchill to take people safely to school, hospital and work and back, in safety, and at Halloween, special patrol cars and a siren polar bear alert were used to protect Trick 'N' Treaters.

Churchill has ample and spacious accommodations of many types. During the Northwest Territories Scout Jamboree in 1970 its Camp Nanook accommodated over 500 Eskimo and Indian Scouters from the Territories, alone, not to mention others from the South.

Churchill lies at the mouth of a 1,000 mile river – much of it relatively unknown.

A huge stone fortress, one of only two of its kind – Fort Prince of Wales. Three hundred ft. long in each direction, walls over 20 feet thick, the fort was begun in 1731 and took over 40 years to build. It was completed just 200 years ago this year. Most of its original 44 cannons are still in place.

Canada's only full time Rocket Research Range. Operated by the National Research Council of Canada, the Churchill Research Range has its own computer, its own Auroral Observatory, and is used for sending instrument packages below, into and above the "Aurora" (Northern Lights).

Some of the finest displays (many in colour) of Northern Lights in the World.

Ancient (pre-historic) campsites of Dorset and Pre-Dorset Culture Eskimos. These have been located and identified immediately across the River from Churchill, adjacent to Fort Prince of Wales. They are visual proof that Churchill was used as a gathering place for Eskimos dating back over 4,000 years. Initial but only preliminary investigations of the sites have been carried out and some publications are available on the findings.

Links with early explorers: The bodies of over three score members of the Ill-fated Munck Expedition (1619-1620) lie buried across from the townsite of Churchill. Such men as Henry Kelsey, James Knight, Richardson, Sir John Franklin, and many many others are linked with Churchill's history. Later, still, men like Charles and Anne Lindbergh – and a succession of great northern flyers flew out of Churchill.

THE SAVAGE INNOCENTS, starring Anthony Quinn and Anna May Wong was filmed at Churchill.

An Eskimo Village (Akudlik): a Chipewyan Indian Village (Dene Village) and a Cree & Metis settlement (The Flats) are all part of the Churchill community.

An Eskimo Museum, operated by the Oblate Fathers – one of the finest in the world, is situated in the heart of Churchill.

Its own Radio Station: CHFC – Fort Churchill, operated by CBC, has been in service almost a quarter century.

A community – owned and operated Television Station – perhaps the only one of its kind, CHGH-TV is still in service, after seven years of serving the twin communities of Churchill & Fort Churchill.

A modern Airport with paved runway that can accommodate not only jets but almost any aircraft in use in the world.

A modern Railway Terminal with freight & passenger service, operated by the Canadian National Railway, with sleeping car & diner service on three trains a week, plus a weekly "way-freight" and passenger car.

A modern radio and telecommunications system center operated by the Canadian National Telecommunications and Bell Telephone Systems, providing commercial traffic, both voice and printed, North and South of Churchill.

A highly complex and efficient AERADIO station, handling all aircraft communications for a vast region of the Canadian North, plus, during the shipping season, marine radio traffic.

A Meteorological Center. The Federal Government employs approximately forty persons, full time, to operate its forecasting department, radiosonde, and ionospheric station, and other branches of weather, aerial and marine communications operations, including the airport and even a Seismic Recording station, measuring earthquake tremors.

A "Mothballed" Former Canadian Naval Signals Station. In excellent state of preservation, this all-metal-clad base of operations for about 200 or more Naval personnel lies midway on the highway between Churchill and Fort Churchill. It has been suggested as a site for establishing a Northern Research Center.

An Eskimo Vocational Training School and hostel-residence. Opened about 7 years ago, this educational institution with a capacity of 250 Eskimo boys and girls from the Eastern Arctic has the latest in training equipment, including audio visual aids, videotape and T.V. cameras, and has trained Eskimos from as far as Grise Fiord, Ellesmere Island – the farthest north "natural" community (non-governmental) in Canada. It is slated to be moved north before long, so this may be the last year to visit it in actual operation. Here young Eskimos are trained as secretaries, mechanics, carpenters and in many other manual skills.

A weekly newspaper. Begun seven years ago, The Taiga Times is now in its seventh year of operation. It is published every Thursday. Present owner & editor is Doug Beiers.

A Multi-Million Dollar Re-Development Program. Well underway, jointly funded by Federal and Manitoban governments, plans call for the building by conversion into a cen-

tral, high-density core area, in the heart of the present townsite of: an indoor heated swimming pool, Recreational complex, multi-million dollar hospital-cum-community health center, library, High School, Fire Hall, Provincial Office building, Shopping Mall and several hundred low cost and medium cost multi-family residences for the present inhabitants. To build some of these homes, an imaginative "Pre-Fab Housing" plant is currently being established, using almost wholly local native (and heretofore largely untrained and unemployed) workers.

Increasingly popular Aurora Snow Festival, held in April (this year April 2-9th). Featuring a vast "Snowl Bowl" – dog sled races, snow-tobogganing, and all the pioneer northern contests, the lateness of Churchill's Winter allows winners and contestants from all other "Winter Festivals" from the South to compete in the "grand finale" of Winter Carnivals.

Ideal facilities for Cold Weather Trials. For over a quarter of a century now Churchill has proven its special advantages as a place to test the functioning of men and equipment under severely cold weather conditions. Starting with "EXERCISE MUSKOX", just after World War II, Churchill has made headlines as aircraft, hovercraft, minisubs, and military as well as civilian clothing, food, vehicles and equipment have been subjected to the severity of the Churchill Winter climate. This year, Churchill was a major stopover where the seven members of the Trans World Snowmobile Expedition, en route to Moscow from Minneapolis, Minnesota stayed for seven days to have their vehicles mended, modified and special, more flexible Eskimo – type "komatiks" (sleds) built for them, by a local, highly skilled Eskimo so they could continue their long and arduous Northern Journey.

Many-many other special features.

Not the least being that:

Churchill is the shortest and best shipping route between Europe and Central Canada and the U.S. More than one thousand miles closer to most cities in the Canadian West (mid-west) from Europe, the Churchill-Hudson Straits route is a natural money-saver for imports as well as exports.

Churchill is a "natural" location for a two-way Container-port. And thus, in this – and many many other ways – Churchill Has:

A GREAT PAST

A GREAT PRESENT . . . and . . .

A GREAT FUTURE!

SCEPTRE RADAR ANCILLARY EQUIPMENT

by E.F. Try (MBIE)

Radar is the one and only area of Meteorological Measurement where we have made no attempt *operationally* to have instrumental recording. In view of the large cost of radar and the planned expansion program of the primary radar network, it is considered most desirable to exploit the usefulness of radar to the greatest degree by means of data recording and real-time distribution.

To these ends, an ancillary equipment known as SCEPTRE (System for Constant Elevation Precipitation Transmission and REcording) has been developed. The system performs two functions; first, it photographically records CAPPI (Constant Altitude Plan Position Indicator) radar pictures and, second, distributes derived CAPPI maps by land-line facsimile to potential users. An auxiliary function of SCEPTRE, very important in some locations, is the inherent capability it provides for remote siting of the radar from the regional weather office.

The recording portion of SCEPTRE consists of a C.R.T. on which is displayed, ring-wise, that portion of each circular radar sweep selected for the particular altitude. While the radar is programmed through the series of elevation angles to generate all the rings required for a single complete CAPPI picture, a 35 mm camera records it from the display screen. The result is a film strip of CAPPI pictures at different altitudes which together show the 3-dimensional distribution of precipitation within the radar's range to serve as basic economical storage for historical and research purposes.

Up to 7 constant height levels are scanned and recorded, including the 'surface' level. The surface level is scanned 6 times, and other levels 3 times per hour. A reference grey scale, in 8 shades of grey, representing known theoretical precipitation rates is automatically inserted on each film frame around the periphery of the CAPPI picture via the C.R.T. Identification data on date and time, station name, height of level etc., is also recorded.

The identification data is not only recorded in alpha-numerics for later manual examination, but also in binary code for computer scanning. A flying spot scanner under computer control very quickly examines each surface level picture for rainfall echoes and integrates returns for each grid point over a succession of many such pictures. From this, it is hoped to relate radar returns statistically with control rain gauges, and thus use the radar as a giant rain gauge over its entire area of surveillance.

The other part of the SCEPTRE development is a facility to present real-time copy on facsimile of the latest radar pictures at the forecasters' desk; at the briefing office if needed, and to such potential users as ATC, airlines, flood control agencies, and even TV stations on perhaps a charge basis. The CAPPI pictures are 8 inches diameter and precipitation is shown in 4 steps of grey scale denoting specific rain gauge intensities. A superimposed map and range rings are provided for quick echo location along with classification data such as time, date, altitude.

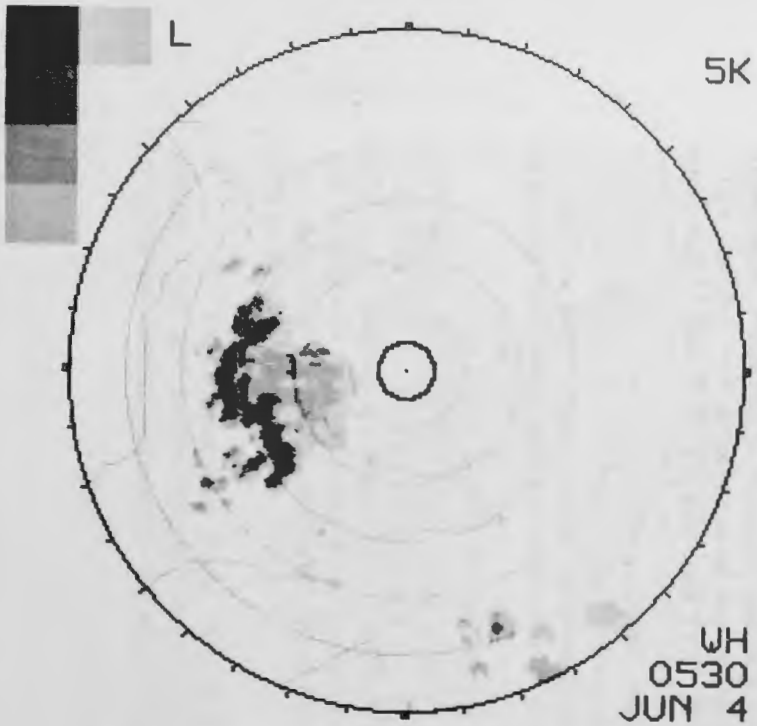
The transmitted levels of 1.5, 3, 7, and 12 Km will be renewed every 20 minutes. This will enable the user to examine radar echoes meaningfully for direction and speed of movement, horizontal and vertical growth, and spatial and time changes in precip-

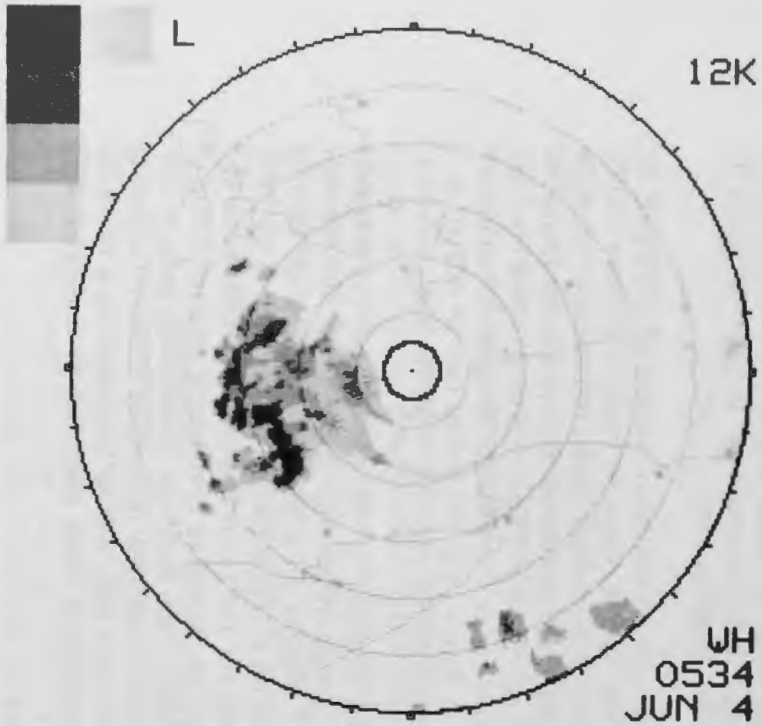
itation intensity. The program of transmission may be modified (levels omitted) depending on weather conditions. By dropping the 12 Km level, the radar may be released from automatic operation for 9 minute manual operation up to 3 times per hour, to allow operators to examine weather beyond the 120 mile limit of the facsimile chart.

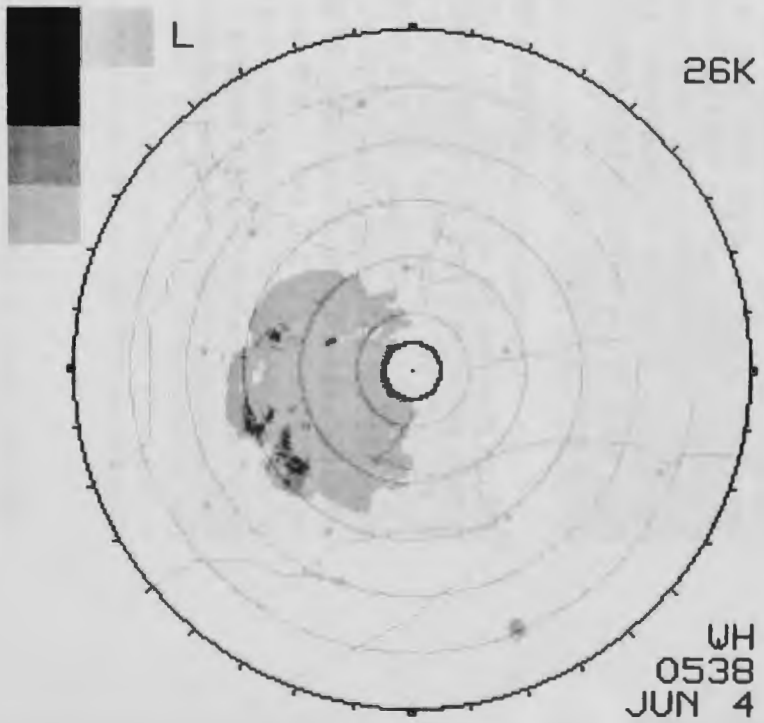
A digital computer is the heart of the transmission portion of SCEPTRE. It processes and stores the digitized incoming radar data in computer memory to form CAPPI pictures in a manner analogous to the 35 mm recording method. Radar information (azimuth angle, range, signal intensity) is sampled rapidly and converted from polar coordinates to X-Y coordinates for insertion into a 1-mile memory matrix. The stored data is then read out at a slow rate suitable for facsimile transmission over voice-grade lines. Because the computer is versatile, more functions can be foreseen in future; e.g. the actual flux of rainfall in a watershed or flood control basin could be transmitted in real-time with the radar pictures.

A SCEPTRE prototype has been installed at Woodbridge for experimental operation with the research radar installation. During the summer of 1971, the film recorder was successfully operated continuously for 3 months on a trial basis. This year, starting April 1, the Woodbridge facility has embarked on a 1 year recording operation as a contribution to the IFYGL (International Field Year for the Great Lakes). The MRS radar, and two others located in upper New York state, are providing overlapping area recording of precipitation falling over the Lake Ontario basin. Film from the Woodbridge radar is subsequently scanned automatically by a computer-controlled flying-spot scanner located in Climatology Division at Dufferin Street. The output data will be integrated on a frame-to-frame basis to give estimated total fallout distribution which may then be correlated with rain gauges, water levels, etc.

The semi-operational status of the Woodbridge radar during the IFYGL project has provided the opportunity to evaluate the SCEPTRE remoting system, and for this purpose an output is presently being provided to the Toronto Weather Office. CAPPI levels of 5, 12, and 26K ft. are being remoted by facsimile every 15 minutes while altitudes of 5, 12, 19 and 26K ft. are recorded. This program will continue for two months till June 30, 1972 but will be resumed later in the year following equipment modification to enable remoting and recording of levels up to 15 Km. As described previously the new program will remote levels of 1.5, 3, 7 and 12 Km every 20 minutes. However, if this proves inadequate to meet the forecasters' requirements other programs can be introduced. For instance, a program which alternately remotes levels of 1.5, 3, 7, 12 Km, and 1.5, 5, 9 and 15 Km every 20 minutes may prove to be more suitable.







Typical "Fax" copies
at Toronto Weather Office.

SHERBROOKE DOTEE D'UN CENTRE D'INFORMATION METEOROLOGIQUE

La ville de Sherbrooke possède maintenant son "Service environnement atmosphérique," c'est-à-dire un centre d'informations météorologiques pour desservir la population.

Il s'agit là du sixième centre du genre installé par Environnement Canada dans le Québec. Les autres bureaux d'informations déjà existants se trouvent à Montréal, St-Hubert, Québec, Val-d'Or et Sept-Iles.

"Le bureau météorologique consiste en un centre d'informations pour la population de Sherbrooke et des environs," souligne M. Réal Franc, qui est en charge de ce nouveau service. "Ce n'est pas un centre d'observation," précise-t-il.

Nombre de personnes et maints organismes tireront profit des informations reçues par ce centre. M. Franc donne comme exemple le cas du cultivateur qui désire savoir, selon les statistiques, quelles sont les époques sûres de gel ou de dégel, ou encore le cas d'un constructeur: "On peut communiquer avec nous, dit M. Franc, pour avoir des informations climatologiques afin de décider de la nature des matériaux nécessaires à une construction résistante . . . et il y a bien d'autres cas encore."

Les centres d'observation dispersés à travers le Canada et même ceux des Etats-Unis envoient à toutes les heures leurs renseignements à Montréal, où un ordinateur analyse ces données, qui sont ensuite retransmises aux centres d'informations tels que celui de Sherbrooke. C'est ainsi que le "Service Environnement atmosphérique" peut renseigner les personnes désireuses de connaître l'état actuel de la température dans un rayon de 1,000 milles ainsi que les prévisions atmosphériques pour les jours à venir. "Evidemment, de dire M. Réal Franc, on ne peut prévoir avec précision la température que nous aurons dans quatre ou cinq jours, car certains phénomènes produisent quelquefois des variations imprévisibles. Cependant, nous pouvons connaître avec assez de précision la température des deux ou trois prochains jours, surtout celle des prochaines vingt-quatre heures."

Pour obtenir l'installation d'un tel service chez elle, une ville doit satisfaire au moins à l'une des deux exigences suivantes: ou bien elle doit être dotée d'un aéroport ayant une moyenne de 5,000 départs par mois, ou encore avoir une population de plus de 50,000 habitants. C'est parce que Sherbrooke satisfaisait à cette deuxième exigence et aussi parce que certains organismes en ont fait la demande que le centre météorologique a vu le jour à Sherbrooke.

A HOPEFUL START AT STOCKHOLM

The Vancouver Sun Editorial Page

The fact that 1,200 delegates from 109 countries can find common cause in the preservation and enhancement of the human habitat makes the United Nations Conference on the Environment, for all its limitations, potentially the most significant event in modern history.

Its least achievement, because it must share the imperfections of the UN itself, could well be the expected "blueprint" for global environmental action and the international agency to be formed to carry it out.

The far larger achievement is that at long last organized mankind has accepted the urgency of the pollution problems confronting the world and has begun the long, hard pull back from calamity.

Because these are politicians meeting in Stockholm, politics naturally are a distraction from the matter at hand. The unfortunate Communist bloc boycott, the grinding of national axes, the abuse of the terms of reference, all these affirm that results will come more slowly than noble declarations. "There will not be," as The Guardian observed, "a world wide conversion to the religion of ecology as preached by some of the environmentalists, this year or next." But perhaps, with a few more Jack Davises putting principle over selfish licence, the year after that?

National modesty notwithstanding, Canadians must be proud of their country's contribution to the Stockholm conference. The major shipping nations – the United States and Britain in particular – may not at present share our preoccupation with ocean pollution. But if the tough international controls sought by our federal environment minister are rejected or watered down by our friends out of mercantile or military self-interest, as they undoubtedly will be, the integrity and aggressiveness of the Canadian case will be remembered.

It was the Norwegian anthropologist and explorer Thor Heyerdahl, unfortunately with no voice in the committees and plenary sessions of the conference proper, who best showed he spoke our language.

Describing once again how pesticides are turning up in whales, penguins and polar bears far from spraying areas, Mr. Heyerdahl said in a conference-sponsored lecture:

"I appeal to the multinational representatives to put aside all immediate personal and national interests and to be aware of the immense responsibility they have toward present and future generations.

"Let us hope they bear in mind that the ocean currents circulate with no regard for political border lines, and that nations can divide the land but the revolving ocean – indispensable and yet vulnerable – will forever remain a common human heritage."

The multinational representatives will not, of course, put aside all personal and national interests. But when the same language can be spoken by a Thor Heyerdahl and an enlightened politician such as Canada's Jack Davis, there is hope that before it is too late they will.

BALLOON GAVE HIM A PICK-ME-UP

The Seanews

The officer from the Canadian Meteorological Service almost got carried away with his work while he was making a weather check on board the W.C. Van Horne.

For when the Met. Officer, George Kyle, was starting one of his regular checks on deck in a very strong wind, he almost followed his weather balloon overboard.

George who is sailing as a member of the ship's crew, has to send up two balloons every day.

Captain David Burt told SEANEWS: "George's main job is the releasing of Radio-sonde balloons over the Pacific. These are inflated with hellium and released and, as you can see from my picture, he almost took off with one of them."

He added: "A small transmitter attached to the balloon sends a series of signals back to the ship. The flight lasts about 1½ hours before it bursts in the thin atmosphere. The miniature transmitter costs about $25, so, with the balloon and the gas, total cost of each observation, to the Canadian Meteorological Service, is about $35."

George Kyle was swept off his feet on the end of a weather balloon.

PERSONNEL

May 1972

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

71-MET-CC-42 — Meteorology (MT)5
Officer-in-Charge
W.O. Yellowknife, N.W.T.
– R. Catling

Project Assignments R & T Division

A. Physical Research Section Project (2 yrs) – K.K. Oikawa

B. Forecast Research Section
Short Range Prediction System Project I (1 yr) – I.B. Findleton

C. Forecast Research Section
Short Range Prediction System Project II (6 months) – J. Kurdyla

D. Forecast Research Section
Lower Stratosphere Project (6 months) – P.W. Galbraith

The 1972 MSc graduates were posted as follows:

University of Toronto

L.A. Barrie	– Atlantic WC, Halifax
D.C. McKay	– WO Toronto

University of Alberta

J.E. Campbell	– WO Edmonton
J.D. Dublin	– Alberta Hail Project – Penhold, Alta.
R.G. Jacobs	– Prairie WC, Winnipeg
A.R. Kellie	– Canadian Meteorological Centre
J.C. Linton	– Arctic WC, Edmonton
R.F. Hopkinson	– Atlantic WC, Halifax (September)

McGill University

J.R. Gagnon	– WO Montreal
R.J. Lee	– Arctic WC, Edmonton

The following transfers took place:

W.G. Lumsden	To: WO Goose Bay From: CFB Shearwater
C.F. Spelchak	To: WO Edmonton From: CFB Portage la Prairie

T.J. Barluk	To: Arctic WC, Edmonton From: CFB Moose Jaw
C. Charette J.D. Steenbergen	To: CAO From: Arctic WC, Edmonton
A.J.R. Leonard	To: WO Montreal From: CFB Winnipeg
A. Saulesleja	To: WO Edmonton From: CFB Chatham

The Atmospheric Research Directorate is pleased to welcome Dr. M. Kwizak who has transferred from Montreal to Toronto to accept the position of Acting Director of the newly established Air Quality Research Branch. This Branch was set up in response to the mandate of AES in the Air Quality field.

Dr. Kwizak has been the Supervisor of the Dynamic Prediction Research Unit in Montreal for many years. In his tour of duty at the Canadian Meteorological Centre he pioneered numerical weather prediction in Canada in the development of models for operational use. During this period he and his staff, through their contributions to the field of numerical weather prediction using high speed electronic computers, have built the Unit into a highly respected group in international meteorology.

He has several awards and achievements to his credit, the latest, the President's Prize, was awarded by the CMS in Edmonton this spring for research in semi-implicit models of the atmosphere.

Dr. Kwizak, in his spare time, is a curler and an avid golfer.

HURRICANES FEMALE

WASHINGTON – The National Hurricane Centre has just released 14 feminine names for this season's storms. They are Agnes, Betty, Carrie, Dawn, Edna, Felice, Gerda, Harriet, Iliene, Jane, Kara, Lucile, Mae and Nadine.

The names, according to the NHC, are picked by computer and no slurs are intended. But some Women's Lib organizations have complained about weather people naming hurricanes after women.

I spoke to Professor Fritz Folgelhammer, one of the leading hurricane watchers in the United States, who said that while he is sympathetic to the complaints of some women, he feels it is impossible to describe hurricanes except in feminine terms.

"The hurricane, as you know, is a storm over water attaining diametres of several hundred miles, following a curved path away from the Equator."

"When fully developed, these tropical cyclones can cause untold damage to shipping and the shoreline."

"The cold, dry air mixing with the warm, moist air and moving in a circular pattern, can come up without warning."

"Any man who is married can appreciate why we have named our hurricanes after women."

"It does seem to fit," I agreed.

"We name our hurricanes in hopes of personalizing them so people will pay attention to where the hurricanes are going. If we named them after men, no one would care about them until it was too late."

"If you called your hurricanes Max or Charley or Arthur or Spiro, they would be ignored. But when you say Hurricane Agnes is on her way, people immediately start buttoning down the hatches."

"You're saying that people are more afraid of women than they are of men? "

"Yes, especially during storm conditions. An angry woman is like a hurricane. When the barometer drops, she starts blowing in all directions."

"I've seen it happen," I said.

"It's impossible to get the same storm effect in a man. A man's anger may begin as a hurricane, but it usually blows out to sea before it reaches typhoon conditions."

"How do you explain that? "

"Well, women tend to store up tremendous atmospheric pressure during the daytime when they are dealing with the house and the children."

"As soon as the husband comes home from work, all this pressure is suddenly released, causing large vortical circulations on all the frontal zones."

"During these storms most men try to head for the basement for safety, but they very rarely make it."

"So that's why they decided to name hurricanes after women! "

"I don't want you to think it was premeditated. What happened was that quite some time ago a weatherman named McAlphin stationed down in Key West spotted a hurricane coming up from Cuba. He immediately called his superior in Miami to report it."

"The superior sent a message asking McAlphin to describe the hurricane to him, and McAlphin without thinking said, "It looks just like my wife, Gretchen."

"The superior sent a message to Washington announcing that a hurricane named Gretchen was about to hit the Florida coast. This information was released to the press who, in the past, had refused to give much space to hurricanes."

"But now with a name on it, a feminine name at that, all the papers picked up the story."

"The weather people were so pleased they decided to name all their hurricanes from that day on after women."

"Then there was nothing sexist in the decision? "

"Of course not. We're all serious people. Everyone knows a hurricane is a feminine phenomenon. There is no other scientific way to describe it."

"When we get a protest about naming a hurricane after a woman, it inevitably comes from someone who has never personally seen one."


"WHAT KIND OF AN UNPALATABLE MESS HAVE YOU COOKED UP FOR THIS WEEK?"
RUBE
SUNSHINE
RAIN
CRYSTALLIZED LIGHTNING
SNOW
WIND
CONCENTRATED FOG
CHAMBERS '72

INTERESTING LETTER RECEIVED AT HEADQUARTERS

R. Foreman,
Apt. 1520,
310 Burrows Street,
Pittsburgh, Pa. 15213.

April 4, 1972.

Director:

I just was reading a December 1971 weather magazine, and to my understanding it said that Toronto, Canada, has a new weather building and is 10 miles north of the prime weather building of 315 Bloor Street West.

I hope you people in charge have the sense to continue recording the temperatures at 315 Bloor Street, or at least in that area, and not close it down as far as recording the daily maximum temperatures are concerned. For if you people did discontinue recording the temperatures at 315 Bloor Street West, or in that area, then you people have taken a 132-year step backwards. The only station in the world (as far as I know) *with the longest record of continuous weather recordings,* and do something like that, would be insanity in the first degree.

You seem to be following the same crazy trend the United States is doing, closing down the prime weather stations and moving out to the airports. Let's get and be scientific and start back immediately to record temperatures at 315 Bloor Street. You can stay at your new location as long as you continue to record the temperatures in the city, or 315 Bloor Street area.

(Signed) Dick Foreman.

DID YOU KNOW -

NOTE WG MET

WHAT IS AN AGNOSTIC CHART?

IB ATIKOKAN

NOTE IB
QUOTE
AGNOSTIC CHART – A PROGNOSTIC CHART THAT NO ONE BELIEVES
QT