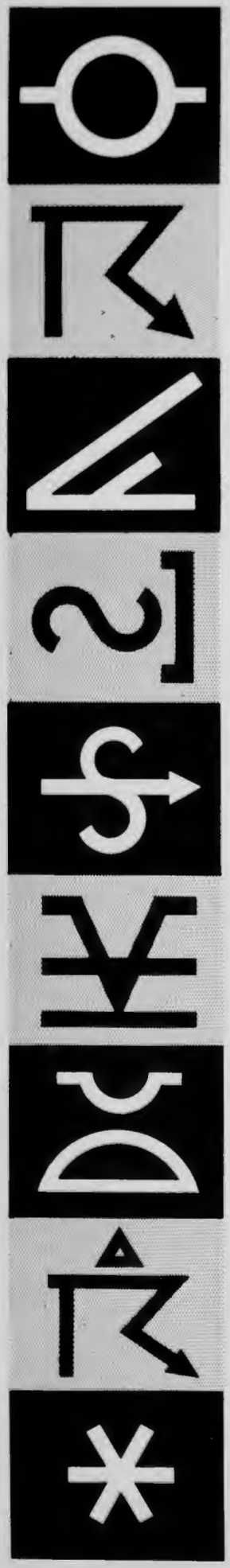


ZEPHYR

OCTOBER 1972 OCTOBRE

ZEPHYR

OCTOBER 1972 OCTOBRE

**Published Under Authority of the Assistant Deputy Minister
Atmospheric Environment Service**

Editor: B.M. Brent

ALBERTA HAIL STUDIES SUMMER FIELD PROGRAM – 1972

The field program of the Alberta Hail Studies Project was carried out again this past summer under the auspices of the Research Council of Alberta, the Atmospheric Environment Service and the National Research Council. Additional scientific support was supplied to the project by staff and students of the McGill University Stormy Weather Group under contract to the AES.

Emphasis was placed on "Project Hailstop", an experimental hail suppression program which had its beginning in 1970 and was expanded extensively in 1972. "Project Hailstop", was conducted this year from 19 June to 18 August, with priority on seeding hailstorms formed in the foothills whose projected damage path would lie between Red Deer and Calgary. The northern portion of the project area, between Red Deer and Edmonton was reserved for single storm seeding experiments under stringent observational circumstances.

Cloud seeding was performed by two aircraft. A Canadian Forces T–33 was operated from CFB Cold Lake and a turbo-charged Cessna 320 was operated by Chinook Flying Services from project headquarters at CFB Penhold. Both aircraft were equipped with 104 droppable pyrotechnic silver iodide flares mounted in flare racks on the underside of the aircraft. Seeding was accomplished by overflying developing storm cells on the right hand storm flank while releasing 10 to 15 flares into the storm from above. Each flare released 50 grams of silver iodide in the form of sub-micron crystals which are very efficient ice nuclei at temperatures colder than - 5C. The hail suppression hypothesis is that these artificial ice nuclei cause supercooled cloud droplets to freeze more readily than under natural conditions. As a result, the number of ice particles available to accrete the remaining supercooled cloud droplets is enhanced, resulting in many more – but smaller hailstones at the ground.

Although simple in concept, this hypothesis is difficult to prove or refute. Nevertheless, it is this task which the Alberta Hail Studies Project is undertaking. The evaluation technique which is being followed is a physical examination of storm character, hail fallout and the detection of silver iodide in rain and hail reaching the surface. Hailstorms are constantly monitored by the Alberta Hail Studies 10 cm radar which records both the intensity and the depolarization of the radar signal return. A remote sensing technique which combines the various bits of radar information to yield an indicator of hail size and shape underwent testing this summer with some success. At the surface, cooperative observers supply information about the hail at the ground and in addition, precipitation samples are collected by two mobile sampling vehicles and at an additional 400 fixed sampling stations for later analysis of silver iodide and ice nucleus content.

During 1972 a total of 70 aircraft missions were flown during which 2750 seeding flares were dropped into 285 storm cells. A maximum of 53 persons were deployed in the diverse project operations which included radiosonde observations, forecasting, telephone hail surveys, radar operations, cloud seeding and field trips to collect hail and rain samples.

The results of the 1972 experiments will not be known for some time. This is the winter task of some 20 researchers and technical personnel engaged by the Research Council of Alberta and the AES. Results of the 1970 and 1971 experiments, which have not been completely analyzed, have however shown interesting results. One storm yielded a

pocket of "rain only" reports downwind of the seeding location and several other analyzed storms showed subtle changes in the radar reflectivity intensity and structure which would indicate a decrease in hail size in the seeded storm cells. However, these and a few other positive results are from a very small data sample and can only be accepted as very sketchy preliminary results until more storm cases can be analyzed to provide a comprehensive picture. Of equal importance is that the physical evaluation technique has yielded results which indicate the path of silver iodide through various storm types. This has provided clues as to when and where the flares must be released in order for the silver iodide to find its way into regions of significant hailgrowth. These are results unique to the Alberta Hail Studies Project, which demonstrate that a thorough physical understanding of the hail-storm and hailgrowth mechanism is necessary to conduct hail suppression programs whether they are evaluated physically, statistically or by both methods.

WMO PRESIDENT FIRST U.N. HEAD TO OFFICIALLY VISIT PEOPLES' REPUBLIC OF CHINA

Dr. D.A. Davies, Secretary-General, World Meteorological Organization, during a short visit to AES Headquarters on Friday, October 20, 1972 reported that the Peoples' Republic of China would likely soon commence participating fully in the work of the Organization.

Dr. Davies was the first Head of a United Nations Body to be invited and to visit the Peoples' Republic of China following the United Nations General Assembly Resolution recognizing the representatives of the Peoples' Republic of China as the only legitimate representatives of China. He had travelled to China last March via Hong Kong, where he had received a diplomatic visa and had proceeded, first, by train to Canton, and then by air to Peking where he had received a very warm and friendly welcome.

During his stay in Peking he had discussions with the Director and Deputy Director of the Meteorological Service, with senior officials of the Ministry of Foreign Affairs and, finally, with the Minister of Foreign Affairs himself. The Minister and the other Chinese officials had shown great interest in meteorology, climatology and environment problems and had stressed their importance for economic and social development. They had also expressed their recognition of the effectiveness of the WMO as the international organization responsible for meteorology.

Since his return, he has been in contact with the Director of the Chinese Meteorological Service to whom he has sent a number of technical WMO publications, and also with the representatives of the Peoples' Republic of China in Geneva.

In July, a group of Chinese meteorologists had visited the WMO Secretariat to study further the technical activities of WMO. They were basically interested in the World Weather Watch program and especially the global telecommunications system and how Peking can be linked to that system. They were also very interested in satellite systems, both the developed and planned systems. Although they are not yet ready to participate in the Global Atmospheric Research Program (GARP), obviously the GARP Atlantic Tropical Experiment (GATE) is outside their area of interest, they may be in a position to participate in the First GARP Global Experiment (FGGE).

In the area of general applications, the Peoples' Republic of China is planning on extending its national airlines and hence a great effort is being made to develop its aeronautical meteorological program. In addition weather modification is receiving some attention and some work has been done in the fields of hydrology and agricultural meteorology.

Insofar as the WMO Technical Assistance Program is concerned, it is not known as yet whether China will be a receiving or donor Member.

The Peoples' Republic of China has been taking a cautious approach towards joining in the activities of the Specialized Agencies of the United Nations. However, it is most likely that WMO will be the first of the Specialized Agencies in which they will participate and a formal announcement to this effect is expected soon. In all probability they will wish to re-ratify the WMO Convention.

THE POLLUTED ATMOSPHERE: A COURSE HELD AT FRASCATI, ITALY

This course, called "Topics of Atmospheric Structure and Composition: the Polluted Atmosphere", held from September 25th to the 30th, was sponsored by Italy's National Research Council (C.N.R.) and organized by scientists of the European Space Research Institute, Frascati (ESRIN).

The main emphasis of the course was on the stratosphere. The possible contribution by supersonic transport planes to the nitrogen oxide content of the stratosphere and the effect of that on ozone and world climate was a recurring topic. The formation of aerosols (haze particles) from gaseous constituents and aerosol influence on climate were also debated often. More knowledge of stratospheric transport and chemistry and of modelling is needed before definite conclusions can be drawn about either of these mechanisms of climate modification. It was most useful to compare recent Canadian and A.E.S. work on these subjects with that being done elsewhere.

The superb lidar system developed at ESRIN was on show during an organized visit to the laboratories. It measures the wind and temperature fields and, surprisingly, the eddy diffusion coefficient. The range is at present about one kilometer but may soon be increased considerably.

An extra-curricular talk was on the decay of masonry in Venice. Many statues have recently crumbled badly while similar nearby ones are still quite sound. The villains are apparently the emission from new industry and the naturally occurring hydrogen sulphide gas in the Venice area; but the choice of victims is at present a mystery. It is interesting that the statues taken by Napoleon to Paris have endured much better than those remaining in Venice.

The very pretty town of Frascati covers the steep side of a hill overlooking the Roman coastal plain. Rome is twenty miles away and in line of sight but was hidden while I was there either by rain or, appropriately, by aerosol haze. There is an Italian version of the Go-Train and many Romans today commute from their homes in Frascati more or less as Cicero did two thousand years ago.

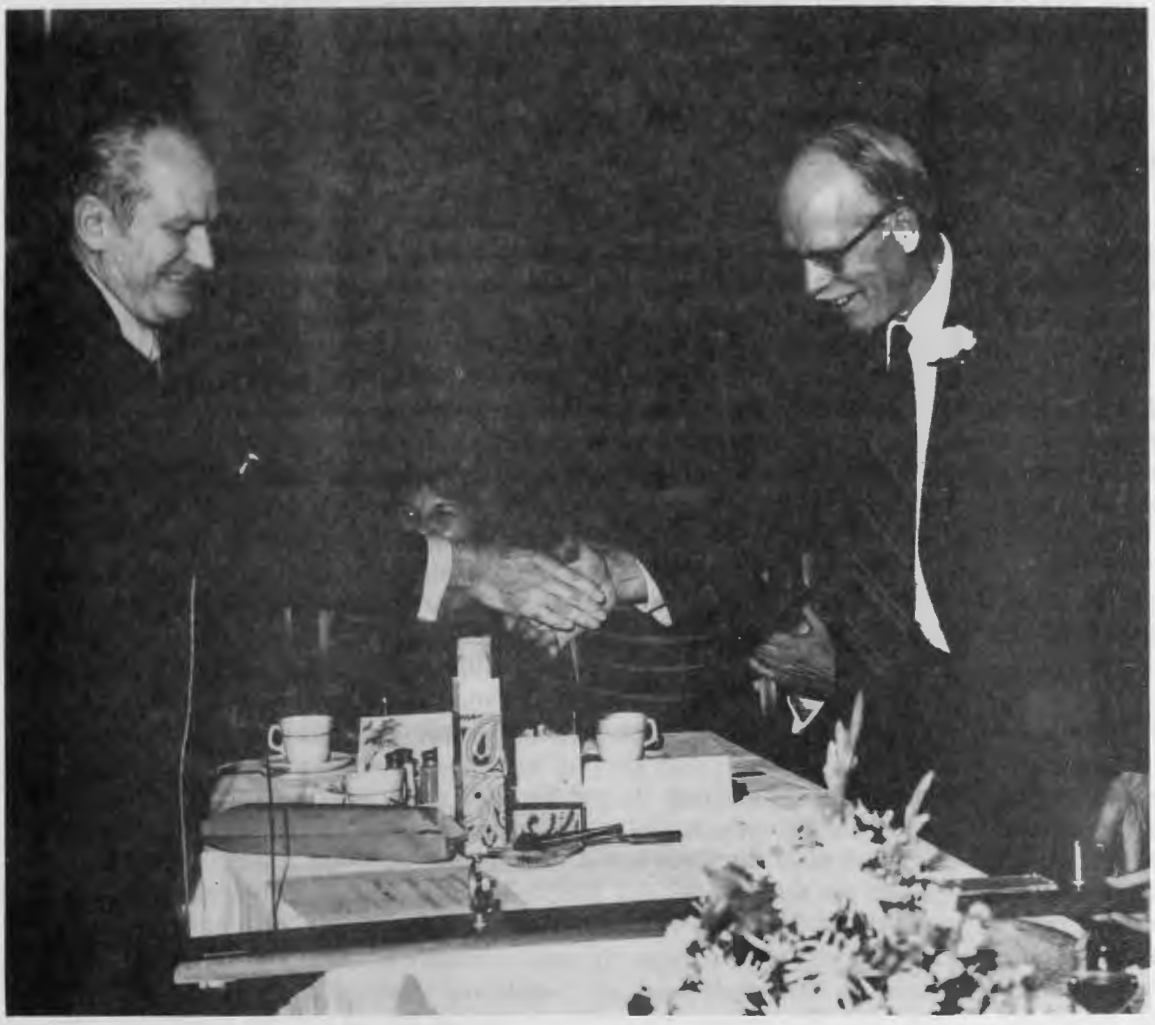
C.G. (CHARLIE) GOODBRAND RETIRES

On Thursday evening, October 12, 1972, a dinner was held in the Atmospheric Environment Service Headquarters' cafeteria to honour Mr. C.G. Goodbrand on the occasion of his retirement.

Seated at the Head Table with Charlie and Joyce, were Mr. & Mrs. J.R.H. Noble, Mr. & Mrs. F.W. Benum, Mr. & Mrs. D.C. Archibald, Mr. J.G. Dyer and Mr. W.W. Stewart, who acted as Master of Ceremonies. More than eighty guests were present, including Charlie's daughters, Gerta, Marlene, and Christine together with his son Kenneth. Representatives from Ottawa, Central Region and the U.S. National Oceanic and Atmospheric Administration joined friends and colleagues in paying honour to Charlie in this "going out" ceremony.

Mr. Noble paid tribute to Charlie's long career in meteorology and made special mention of the outstanding work performed by him in the Administration of the Joint

C.G. (Charlie) Goodbrand



Presentation of Barometer on Behalf of Headquarters Staff By J.S. Dickson

Arctic Weather Stations. On behalf of the A.E.S. Headquarters staff, Mr. Noble presented Charlie with a beautiful china polar bear by Royal Copenhagen. Also on behalf of the Headquarters staff, Mr. J.S. Dickson presented Charlie with a barometer so that he might have a constant reminder of by-gone days.

Peter Chirka, on behalf of the staff of Central Region presented Charlie with an original Les Tibbles oil painting.

J.G. Dyer spoke on behalf of those working with Charlie on the U.S. side, recounting amusing anecdotes of the time when he and Charlie travelled together in the Arctic. He presented, on behalf of Charlie's U.S. colleagues, a commemorative plaque and on the more personal side, a variable speed jig saw.

LE NIVEAU DE VIE INTERESSERAIT PLUS LES GENS DU NORD QUE L'ENVIRONNEMENT

Par Walter Krevenchuk de "La Presse"

INUVIK, T.-N.-O. (PC) – Dick Hill est un scientifique qui se préoccupe davantage des gens que des molécules.

Il y a 10 ans, il a décidé de "quitter la grande ville" – Toronto – pour tenter une expérience dans le Nord. Il est venu dans cette localité de l'Arctique et s'est pris d'intérêt pour le Nord canadien et pour l'évolution qu'il y a constatée.

M. Hill, âgé de 42 ans et originaire de l'Alberta, s'est engagé dans les affaires de la collectivité, et il est venu à la conclusion que les problèmes due Nord sont des problèmes "humains". "Nous bâtissons des autoroutes sans nous préoccuper beaucoup de ce qui arrive aux gens, dit-il. On fait beaucoup de bruit autour des pipelines, mais si on veut parler de changement et de bouleversements, une autoroute, selon moi, est beaucoup plus susceptible de bouleverser les gens qu'un pipeline."

Il a ajouté qu'il y a dans le Nord des gens nomades "qui sont plus inquiets de savoir où ils coucheront la nuit prochaine, ou d'où viendra leur prochain repas, qu'ils ne le sont au sujet d'un pipeline."

D'autres, cependant, parce qu'ils ont eu la chance de s'instruire et d'obtenir des emplois payants, s'intéressent davantage aux aspects économiques de l'affaire.

"Actuellement, il serait difficile de trouver 100 emplois honnêtes le long de la rivière Mackenzie." Le pipeline assurera de 100 à 150 emplois. Quant à l'impact impossible sur l'environnement que causera la construction d'un pipeline et d'une autoroute, M. Hill dit que les gens du Nord ne s'en inquiètent pas tellement. "Nous avons été affectés grandement par les soi-disant problèmes d'environnement, mais c'est plutôt un phénomène venu du sud et imposé à nous."

ADAPTATION AU CHANGEMENT

M. Hill est d'avis que les populations due Nord vont s'adapter aux changements qu'apporteront les développements. "Il y a déjà eu un changement extraordinaire, et les gens s'y sont adaptés . . . ils ne vivent plus dans des iglous ou dans des tentes . . . ils habitent tous dans des maisons de bois."

"Nous vivons dans une ère de changement continuel, et il est difficile à quiconque, à l'intérieur ou à l'extérieur, de dire si ce changement est bon ou mauvais."

"Nous sommes partis de très bas, il y a à peine 15 ans, et nous avons aujourd'hui un niveau assez bon . . . là où il n'y avait pas de système scolaire, il y en a un. . . là où l'habitation était minable, elle est maintenant convenable . . . il n'y a pas de pénurie de travail, et nous ne sommes pas obligés d'amener autant de gens de l'extérieur."

M. Hill, autrefois maire d'Inuvik, a peu de sympathie pour des indigènes qui prétendent que le Nord leur appartient. "Il n'y a pas de doute que les gens ont des droits sur la terre qu'ils utilisent, sur laquelle ils vivent, etc. Mais on ne continue pas éternellement de posséder la terre . . . on est ce qu'on est aujourd'hui, plutôt que ce qu'étaient les ancêtres."

PROPOSED U.S. GREAT LAKES SEEDING PROJECT

The United States is concerned with the fresh water supply available in the densely populated Great Lakes Basin area (32,000,000). Some Basin Cities already have a water problem and projections indicate a very significant population growth in the area in the years ahead.

Since 1967 NOAA has been engaged in experimental weather modification studies on winter snowstorms over Lakes Erie and Ontario in collaboration with Cornell Aeronautical Laboratories, the State University of New York and other agencies. Canada has been kept fully informed on the activities of this "National Great Lakes Snow Distribution Project". AES Scientists attended project discussions, observed some of the operations and accompanied the seeding team on one cloud seeding mission over Lake Erie. The project was aimed at determining whether seeding of supercooled clouds over the Lake could cause the supercooled droplets to freeze, thus preventing or reducing riming of the ice crystals. The lighter crystals would travel further in the wind, distributing the snowfall over a larger area and reducing the excessive snowfalls experienced in some areas bordering the Lakes. Subsequently, experiments were conducted to determine whether seeding of non-precipitating supercooled clouds over the Lakes could cause them to drop snowfalls into the lake. Only a limited number of missions have been conducted but NOAA scientists are most encouraged with the results.

These experiments suggested to NOAA the possibility of augmenting the water supply of the Great Lakes using cloud seeding techniques to fast cycle back into the lake, water escaping from the lake. Lake Michigan, lying completely within the United States, seems amenable to the application of similar techniques developed over Lake Erie. NOAA sponsored conferences attended by interested research agencies, including the University of Wisconsin at Madison and Milwaukee, the University of Michigan, the Illinois State Water Survey and the Environmental Research Laboratories of NOAA, have drafted a comprehensive program of research into all aspects of a proposed project. In addition to the scientific and engineering problems, the hydrology and climatology, the legal, social, and economic aspects are to be fully explored. Funding will not likely be available before 1974. One can speculate that some reasonable experimental period of 3 to 5 years demonstrating technical success, and the resolution of other problems would be followed by an operational program on Lake Michigan and pressures for extension to other Great Lakes. The presently envisaged program would be confined to the late fall and early winter period, when water levels are lowest and during periods when the proposed technology could be applied. Estimates are that perhaps 10 times a season economically significant increases would be possible and worthwhile, i.e. one storm might be induced to provide sufficient extra water to supply the total domestic and industrial water needs of the basin for many days.

AES will monitor for Canada the proposed program for precipitation augmentation and can anticipate being further consulted and requested for cooperation. There are many questions of interest to Canada in this program aside from the purely scientific aspects of techniques of the program. There are questions of a political nature, the desirability and effects of water augmentation in the Great Lakes Basin, water management, legal responsibility and rights, and applicable legislation and future considerations.

COMMISSION FOR MARINE METEOROLOGY

The World Meteorological Organization has a number of Technical Commissions of which the Commission on Marine Meteorology is one of the largest. The importance of this Commission arises from four factors:

1. That seventy percent of the earth's surface is covered by ocean.
2. That weather services absolutely need information from all parts of the global atmosphere.
3. That the ocean as a natural resource must be rationally exploited.
4. That the continued environmental quality of the ocean is a concern to all countries.

This commission is dedicated to achieving international co-operation of all Members to obtain meteorological information from ocean areas and in particular through the voluntary ship program. Around six thousand ships have been recruited to provide

weather observations, and without remuneration in most cases. At the present time, studies are being made to improve methods for obtaining data, by satellite, ocean buoys and free floating balloons.

The original purpose of CMM was to improve weather services for navigation and to provide marine warnings for safety of life and property at sea. Since 1971, the trend has been toward broadening CMM activities to cover the applications of meteorological and ocean data to service areas such as fisheries, natural resource exploration, tsunami (or earthquake-generated tidal wave) warnings, etc. These users need ocean data as well so that under the IGOSS plan (Integrated Global Ocean Station System) jointly sponsored by IOC and WMO, plans are underway to extend on a broader basis the data collection in the ocean depths. CMM is primarily operational and service oriented in outlook. Canada has contributed much to the CMM. Mr. K.T. McLeod, a former AES colleague, was President from 1962 to 1968. Members of the AES participate actively on CMM Working Groups, for example, Mr. L.K. McGlening (User Requirements Division) was Chairman of a Working Group and is very active, Mr. W.E. Markham OIC, Ice Central, Ottawa has been on the Working Group on Sea Ice for several years. The present Canadian Member of CMM is Mr. Roy Lee, Chief, User Requirements Division, who headed the Canadian Delegation at CMM–VI in Tokyo, October 9 – 21, 1972.

THE UNPOPULAR WEATHERMAN – ALWAYS UNDER FIRE

By Doug Law

Walter Frymire has what must be the most unpopular job around.

Mr. Frymire is the weatherman – in charge of the Kamloops weather bureau at Fulton Field.

No matter what he does, he is criticized by the public. If he predicts sunny weather correctly, the farmers are angry because they may need rain for their crops. Naturally, if he incorrectly predicts the weather because of a last minute shift in the wind, he is the butt of sarcasm by everyone; and if he correctly predicts the weather, cold weather, he is still unpopular because people want warm weather.

Of course, skiers want snow and if the snow is late in arriving, who acts as the whipping boy for the skiers? Why your friendly neighbourhood weatherman of course.

Considering the weatherman's occasional lack of success in predicting the weather, some people might think he does little more than wet a finger, point it outside in the wind, and say, "well, I guess I'll predict rain today."

This is far from the actual case since today's weatherman uses scientific instruments and computers to accurately predict and record the weather.

The Kamloops weather bureau has a small 10 foot square room that is absolutely packed with electronic teletype machines. This is part of the Canadian Weather service's fully computerized teletype system. "The Canadian Weather Service was the

first weather service in the world to adopt them in 1970. The Americans followed suit a year or so later, when they saw how well the system worked," Mr. Frymire said.

"The head computer is in Toronto which feeds information to computers throughout Canada," Mr. Frymire said. He said the central weather office for western Canada is in Vancouver and is the source of weather information for the Kamloops station.

The weather service office in Toronto completely gathers and analyses the weather. One of the teletype machines carries current weather conditions for all of western Canada, from Manitoba west and the western United States. Another teletype handles weather forecasts for western Canada and originates from the central analytical office in Montreal. The regional weather prediction office for Kamloops is in Vancouver.

With all this weather information provided, the local weather bureau still has a lot of work to do in applying the forecast to this area.

Weather readings are taken every hour on the hour and are also taken when a significant change takes place. Temperatures, visibility, cloud levels, barometric pressure, rain, dew point and wind velocity and direction are all noted.

With all those fancy computers working for the weather service one would think they would be infallible. Unfortunately such is not the case, but when the forecast does err, it is usually because of a sudden shift in a high or low pressure area. After all, the weatherman can only predict from what information he is given.

The weather bureau also has extensive weather maps which are used in predicting future weather patterns. The maps show the high and low pressure areas, enabling the weather bureau to predict what weather will be in Kamloops the following day.

Mr. Frymire said the bureau makes one-day, three-day and five-day weather forecasts and "the five day forecasts are the longest forecasts we have any confidence in."

PAYLOAD TRACKING BY TONE RANGING

The Tone Range/Telemetry Interferometer System (TR/TMI) is a novel application of an old principle, – the Doppler Effect. The doppler phase shift of an electromagnetic signal sent to a moving airborne system and received back from it, is used as a measure of the slant range to the system. The TR/TMI system is used in general scientific high-level balloon and rocket payload tracking activities to obtain the type of information usually available only from radars, namely, range, azimuth angle and elevation angle.

To measure range, a high frequency carrier wave is modulated at a known and much lower frequency. This mixed tone is transmitted to a moving airborne station which receives, remodulates (at known frequency) and retransmits it back to the ground station. By measuring the phase shift between the original ground signal and the modulated one received from the airborne station, the distance of the airborne payload from the ground station can be determined.

Angular measurement is a little more tricky, and depends on the measurement of interference patterns from two sets of ground-plane crossed-dipole antennas. One set consists of a North antenna and a South antenna, both a known distance apart. Another set consists of an East antenna and a West antenna also the same distance apart. The two sets are exactly at right angles with each other. Interference patterns are produced by mixing the signals received from the airborne transmitter by the N–S and E–W antenna pairs. The azimuth and elevations angles are then obtained by measurements on the interference patterns.

Several comparative studies have shown the performance of the TR/TMI system to be comparable to that of a good tracking radar such as the AN/FPS–16. Yet, it possesses some decided advantages over radars or any GMD equipment, not least of which is its low cost. A complete TR/TMI system costs about $20,000; a good tracking radar costs in the neighbourhood of $250,000. The TR/TMI can be installed and maintained by any good general electronics technician; a radar requires highly specialized skills for installation and maintenance, not to mention the high installation costs. Moreover, it is well known that the quality of the results obtained from radar tracking depends to a large extent on the competence of the radar operator.

The TR/TMI is such a simple system that it can be incorporated easily into any AM/FM telemetry ground station. Its airborne package is so light and small (cigarette-packet size) that it makes more space available for additional payload and electrical power than conventional transponders.

Perhaps the best feature of the TR/TMI system is that it never misses the target that it is tracking. This is because it provides continuous-tracking hemispheric radiation which ensures payload illimination at all times and prevents the loss of target or loss of lock-on which can (and often does) occur with radars. Tracking by Tone Range is like watching a soaring rocket with the naked eye in broad daylight on a clear day. Comparatively, radar tracking is like looking for the same target with a flashlight at night.

There is a story being told around White Sands Missile Range in New Mexico, U.S.A., about what happened during a radar-tracked rocket-borne experiment some time in the mid-sixties when the Tone-Range system was being advocated but not yet accepted. The proponents of the TR/TMI system could not obtain permission to have their system included as one of the "official" tracking equipment for the rocket. Nevertheless, they somehow managed to get the TR/TMI airborne package on the rocket. "Blast, I've lost the . . . thing" announced a radar operator over the intercommunication system during the rocket flight. "I have not even locked-on yet", reported the back-up radar operator. "Why don't you try elevation X° and azimuth Y° or thereabouts", prompted a pirate voice on the control intercom. "By golly, there it is again", announced one of the radar operators triumphantly. Then, realizing that the voice was not that of the flight director asked, "Hey, who was that? " . . . . silence . . . . "Well, thanks anyway."

The TR/TMI system is now a well-accepted tracking device, though it is not yet as popular as the tracking radar. There are TR/TMI systems in operation at Fort Churchill, Manitoba, Point Barrow, Alaska, Wallops Island, Virginia, White Sands Missile Range, New Mexico, Kourou, French Guiana, Kronograd, Sweden, etc. One is being set up in the Atmospheric Processes Research Branch of the AES for evaluation and future use at field experiments being planned in the Branch. The idea is to slave this system to a minicomputer and to develop the total system so that tracking data are derived immediately and automatically during flight.

And one other good thing about the Tone Range system–with it, the payload can always be located after it drops back to earth and, if possible, recovered.

—Star photo by Dan Dutton

NOT A BOMB, as these boys feared, but only a box of weather instruments, drifted down into a schoolyard in West Hill yesterday. Bradley Neil, 11, holds the box while Tony Eluk (left) and Scott Clover hold the balloon and parachute that let it down gently. The boys thought they heard something clicking inside the box.

TORONTO STAR–11 Oct. 72

PARACHUTE 'BOMB' WAS ONLY BAROMETER

TORONTO STAR

A mysterious white box that drifted down by parachute into a West Hill school yard yesterday gave a group of boys there a few bad moments.

It turned out to be just a box of weather instruments but Tony Eluk, 10, of Beechgrove Dr. and his friends thought they could hear something ticking inside and feared it might be a bomb.

"There was an airplane circling up there and when we saw the parachute we thought it might have been something dropped from the plane," said Tony who was playing with three friends, Scott Gover and Carl Markham, both 10, and Bradley Neil, 11, in the basketball court of the William G. Miller Public School.

Scott said they stayed back from it for about half an hour, thinking it might explode, then gingerly pried the lid off the foam-plastic box. Inside was a battery and electronic circuits along with what looked like part of a barometer.

TESTING SATELLITE UPPER AIR SOUNDINGS AT AES HQ

The Meteorological Services Research Branch is engaged in studies to assess the value of vertical temperature profile radiometer (VTPR) soundings obtained by satellites for the purpose of weather analysis and forecasting. The VTPR observations are scheduled to begin early in December 72. The studies will form Canadian contributions to a WMO Working Group on the Use of Satellites in Meteorology. They have been designed to determine the benefits that can be derived by supplementing the conventional rawinsonde system with VTPR data in two ways:

(i) by transforming the satellite information to make them compatible with regular aerological synoptic data that are used in a 12-hour forecast cycle (as is done at the Canadian Meteorological Centre) and

(ii) by applying VTPR data, immediately it is received from the satellite, using an update regional model that assimilates asynoptic data and can carry out predictions up to 24 hours as required, between the standard aerological times of 00Z and 12Z.

The studies also provide a basis for investigating to what extent a satellite indirect sounding system can supplement, or replace, conventional rawinsondes. Initially, VTPR data will be available for water areas only so that the studies are geared to investigating improvements in forecasting at coastal locations. If the VTPR data become available over land, it is anticipated the studies will have significance in forecasting over remote areas in general, such as the Canadian north.

ONDES LONGUES

HW

ONDES COURTES

HW

THE INTERNATIONAL CLOUD PHYSICS CONFERENCE
LONDON, AUGUST 21–26

The International Cloud Physics Conference, which is held every four years by the International Cloud Physics Commission, took place this year in London, England in the rooms of the Royal Society. Following the opening address the conference began in earnest attempting to cover recent advances in the diverse fields of Cloud Physics in an all too short six days. The program committee, under the chairmanship of Dr. B.J. Mason (Director-General, British Meteorological Office) had elected to concentrate on 11 review papers and an additional 43 papers selected for oral presentation from a total of 150 submitted.

Papers from the U.K., U.S.A., Canada, Japan, U.S.S.R., Australia, Germany, South Africa and Israel were heard on the topics of Instrumentation, Nucleation and Cloud Droplet Growth, the Physics of Rain, Snow and Hail, Cloud Dynamics, Numerical Modelling, Electrification of Hydrometeors and Cloud Physics Problems of GARP. Canada was well represented at the conference by 18 delegates out of a total of 200. Four papers were given by Canadian authors including one invited paper.

A tour was conducted of the British Meteorological Office Headquarters unit at Bracknell midway through the Conference where guests inspected mockup displays of current BMO cloud physics projects and had an opportunity to discuss them with the scientists involved. In addition a brief tour was made of the Central Forecasting Unit which was undergoing the usual teething problems associated with the acquisition of a new computer system. It was evident that regardless of the size of the country involved, the problem faced by meteorologists everywhere is still the same – issuing a good, accurate forecast!

In addition to a banquet held in elegant surroundings at the Hyde Park Hotel, scientific discussions continued during luncheon and in the evenings at many of London's fine pubs and restaurants. Even the weather cooperated with an impressive eight day stretch of warm temperatures, blue skies and no rain. Perhaps Dr. Mason could be convinced to have us back again, even if only as a method of attempting a somewhat non-scientific weather modification program!

PERSONNEL

The following transfers took place:

W.R. Evans MT6	From: Montreal Weather Office To: Pacific Weather Central, Vancouver
S.A. Hattie MT3	From: Maritimes Weather Office, Halifax To: Gander Weather Office
W.B. Watson MT3	From: Canadian Forces Base Uplands To: AES Headquarters, Toronto
E.J.G. Guimond MT5	From: Maritimes Weather Office, Halifax To: Air Services Training School, Ottawa
A.P. La Chappelle MT3	From: Canadian Forces Base Cold Lake To: Resolute Bay Weather Office
R.B. Saunders MT4	From: Canadian Forces Base Winnipeg To: Canadian Forces Base Moose Jaw
E.J. Oja MT2	From: Canadian Forces Base Shearwater To: Canadian Forces Base Greenwood
H.J. McCabe MT5	From: Resolute Bay Weather Office To: Edmonton Weather Office
M.D. Hewson MT2	From: Canadian Forces Base Greenwood To: Gander Weather Office
J.E. Shaykewich MT2	From: Canadian Forces Base Portage la Prairie To: Maritime Weather Office, Halifax

The following resignation took place:

C.K. Odegaard MT3	From: Churchill Weather Office.

TRIVIA

HOW MUCH IS ONE PART PER MILLION?

The expression "parts per million" (ppm) has moved from the laboratory into the columns of newspapers and magazines. DDT residues in soil, mercury in fish, herbicides in lakes and streams are all described in parts per million. The following examples reprinted in the newsletter "Pith to Periderm" published by the Maritimes Forest Research Centre make it easier to visualize just how small a concentration is represented by the term.

One inch in 16 miles is one part per million.

A postage stamp is one part per million of the weight of an average adult.

One gram needle in one ton haystack is one part per million.

One part per million is a minute in two years.

Your hand on the ground covers five parts per million of one acre.

LA METEO OUI MADAME! LE TEMPS EST BIEN BAS

On l'a couché, on lui a administré une potion, fait une transfusion, on lui a tiré la langue, on l'a obligé à dégorger "Aaaaaaaaa", on lui a délivré quelques bonnes paroles, rien n'y a fait: le temps, malade, a refusé de se relever.

Une aimable lectrice, qui n'y va pas avec le dos de la cuillère, nous a fait tenir une suggestion sur la façon de sortir le soleil de sa tanière et d'améliorer le temps: un médiateur.

Bien qu'audacieuse, cette proposition s'avère intéressante. En effet, notre lectrice part d'un principe d'un indiscutable bon sens: les choses sont ce qu'elles sont et ne peuvent être autrement qu'elles ne sont à moins qu'elles ne changent. Changeons-les donc, lance-t-elle. Elle suggère de ramener à la raison les parties qui s'opposent au sein du bureau météorologique, et de trouver un terrain d'entente. Le voici: si tout le monde à Dorval prend ses vacances, le soleil cessera les siennes et le temps se montrera un peu plus chaud.

FAMILY PREDICTION: ANOTHER FORECASTER

By John Tompkins of The Journal

BIG HORN RESERVE – Isaac Beaver, Alberta's Indian weather forecaster believes in the motto 'like father, like son.'

The Big Horn Reserve Indian, who has been predicting the province's summer and winter weather since the death of his father, Chief Walking Eagle, five years ago is now busy teaching his elder son, Lee Patrick Beaver.

"I've been teaching him now for a couple of years," Isaac told The Journal recently. Lee Patrick is eight.

"Yeah, he's got a start on me, you're right," he added. Chief Walking Eagle first started teaching Isaac the tricks of predicting weather from the habits of wild animals when he was 11.

Isaac takes Lee Patrick out into the woods as often as he can. Though there is small game in the forest near the reserve that straddles the North Saskatchewan River about 120 miles west of Red Deer below the David Thompson Highway, the serious teaching demands a five-mile hike into the bush.

Isaac, of course, persists in his refusal to reveal the methods of prediction that have made him and his father before him eagerly sought-after by the province's news media. It is an insult to press him.

But he is concerned that the family keeps its franchise on the long-popular predictions.

"My father taught me, and his father taught him. Now I teach my boy," he said.

Only the environment has changed, attests Isaac. Both grandfather and father learned and practiced the art of telling the weather in the Kootenay Plains, west of the Big Horn Dam. It was a time when game was more abundant and man's presence less so.