

# ZEPHYR

AUGUST 1972 AOÛT

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## EARTH RESOURCES TECHNOLOGY SATELLITE

On the 23rd of July, 1972, the first spacecraft of the Earth Resources Technology Satellite series (ERTS 1) was launched from NASA's Western Test Range in California and commenced to photograph the earth's surface with its cameras and scanner arrays. This spacecraft is designed to provide information about the earth's natural resources and to expand scientific knowledge in the fields of agriculture, oceanography, forestry, geology, geography, hydrology and cartography, and of course meteorology.

The spacecraft is in a polar retrograde orbit at an altitude of 570 nautical miles. Its cameras and scanners view a hundred mile square at the surface of the earth in each picture, and repeat coverage of the same surface area once every 18 days under cloud-free conditions. The satellite is equipped with 3 Return Beam Vidicon (RBV) cameras, plus a Multi-Spectral Scanner (MSS) operating in 2 visual and 2 near-infrared bands. The RBV cameras are each filtered to one of 3 windows – red-orange, blue-green, and the near infrared. From each of these a black and white photograph can be obtained, or when these images are combined by means of colour filters, false colour imagery may be produced to enhance the subtle differences in the spectral response of the scene to depict differences in vegetation, soils, and atmospheric conditions. Similarly, false-colour imagery can also be made with combinations of the four bands of the multi-spectral scanner images.

Canada has its own sophisticated ground receiving station located at Prince Albert, Saskatchewan. This data acquisition facility utilizes an 85-foot computer controlled dish antenna to track the satellite and the signal is reproduced by an electron beam image recorder. The received data is monitored and recorded on video tape at Prince Albert and the tapes are then flown to the Canada Centre for Remote Sensing of the Department of Energy, Mines and Resources in Ottawa. Here the imagery is processed into negative form and copies of the photographs reproduced in the required combinations, or single frames, for distribution to scientists and agencies interested in their study.

Imagery produced so far from this new spacecraft is above expectations, with a resolution of less than 300 feet at the surface of the earth. It appears to be capable of giving valued information for such purposes as land-use planning, studying crop diseases, monitoring glaciers, ice, volcanoes, and for identifying forestry, terrain features, geology, etc.

Unfortunately, in September the RBV cameras have, for the time being, been turned off, since they seem to be causing an unaccountable power drain on the spacecraft electrical system. The MSS is, however, operating as scheduled on each pass over North America.

In the cartographic field, the imagery is soon to be produced using a Laser Beam Image (LBI) recorder, designed and built by our AES HQ neighbours at the University of Toronto, Institute for Aerospace Studies (UTIAS). This LBI unit will correct the image distortion and rectify it to precisely fit survey points identified in the photo, as well as producing a rectified image from each channel, simultaneously and in colour or false colour combinations as required.

The new spacecraft promises to provide a new tool for studying the earth and its surface environmental conditions, on a scale never before possible, and should be of significant value to all scientists working in the earth science field.

This spacecraft evolved undoubtedly as a spin-off from the weather satellites that pictured the atmosphere and surface at much less resolution. However, it was these space photos, which revealed many visible features in a more generalized view, that whetted the appetite of earth scientists and created the desire to view these same features in more detail at a much larger scale than that provided by the weather satellite camera. Hence, the basic spacecraft configuration for ERTS is identical to that developed and used for the NIMBUS series of weather satellites.



*ERTS 1 RBV Photo taken from 570 nm over the Cornwallis Island Barrow Strait area of Canada's Arctic.  
(Photo-Canada Centre Remote Sensing DEMR)*



*ERTS 2 in test chamber before launch.*

(from Space World)

### **INSTRUMENT BRANCH INVOLVEMENT WITH THE IFYGL LAKE NETWORKS**

A key AES commitment to IFYGL was to provide the core program with six automatic weather stations along the Lake Ontario shoreline and three automatic telemetering stations aboard Bedford Tower platforms in the lake. Instrument Branch undertook the provision of these stations in support of Lake and Marine applications unit of Central Services.

An equipment development specification was evolved in 1969 by interaction between the design and development group and the users. A survey of commercially available equipment confirmed that internal design and development should be undertaken along the lines of the MDA (Modular Data Acquisition) concept already being pursued in Instrument Branch. Although the Hydromet Projects Support group managed the design, development and procurement of the equipment, almost every group in Instrument Branch contributed to the project which involved sensor and electronics design as well as logistics design.

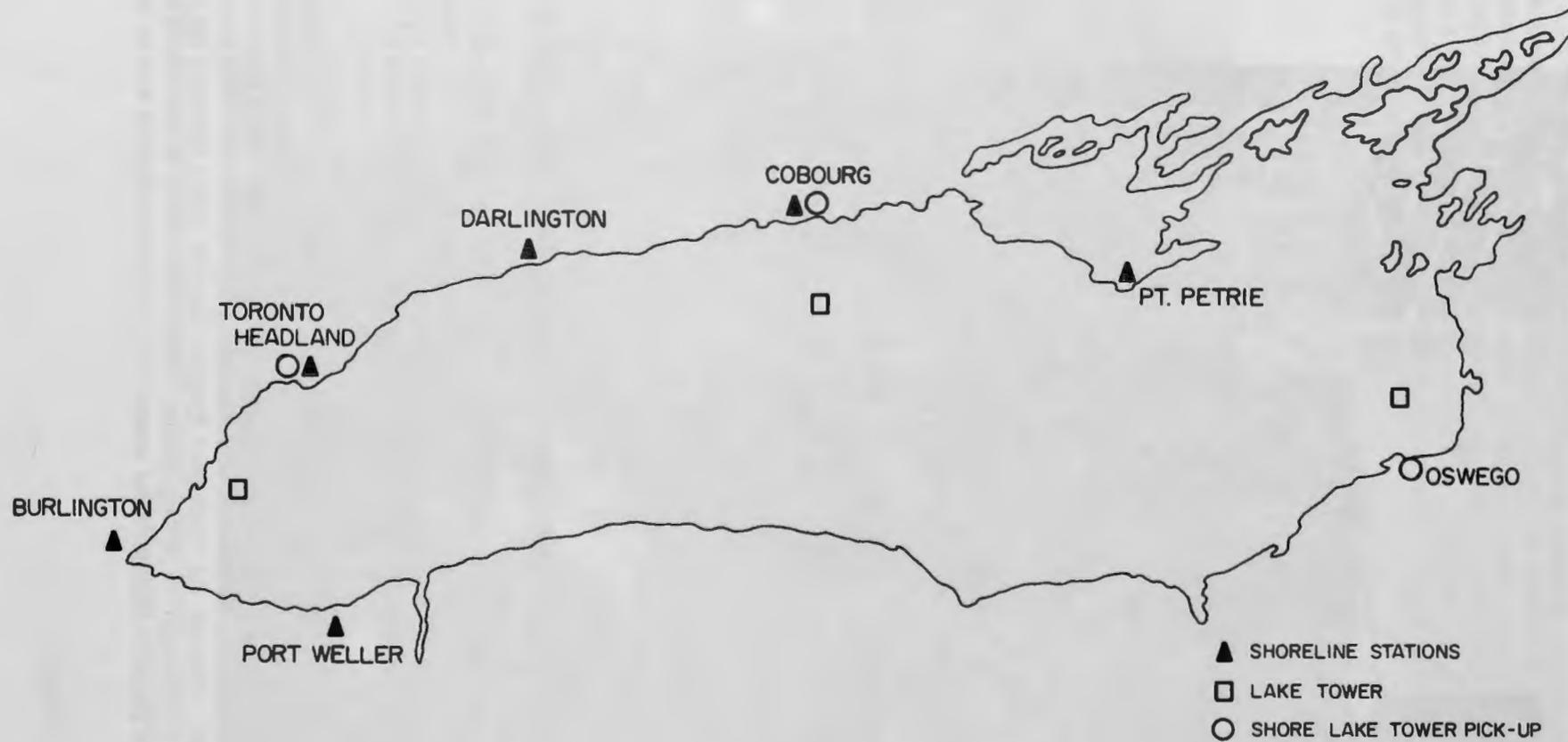
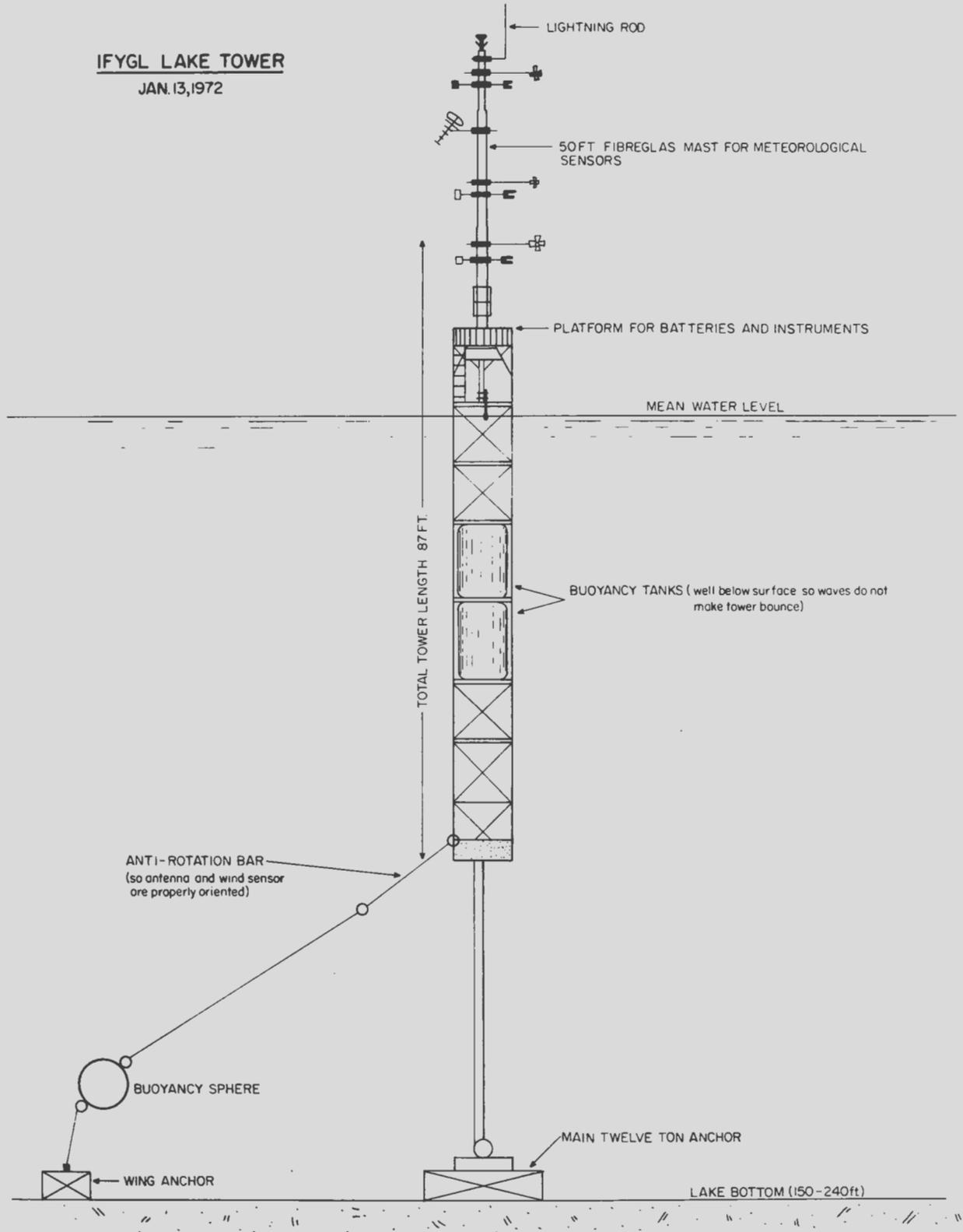


Figure 1  
 LAKE ONTARIO  
 STATION SITES FOR IFYGL

**IFYGL LAKE TOWER**

JAN. 13, 1972



**Figure 2**

Each shoreline station samples atmospheric pressure, air temperature, dew point, precipitation and wind every ten minutes and records the data along with date and time on eight level punched paper tape. At some stations the Canada Centre for Inland Lakes provides water temperatures for the record. The location of the six shoreline stations is marked by the solid triangles in figure 1.

Each lake tower station (see open squares, figure 1) samples three levels of air temperature, dew point and wind and single levels of precipitation and surface water temperature. The data is telemetered to the nearby shore pickups (shown by the open circles in figure 1) where it is recorded along with date and time on eight level punched paper tape. The lake tower stations are powered by lead-acid automotive batteries which are periodically recharged using a propane powered generator.

The lake tower station and its mooring system are depicted in figure 2, while figure 3 shows how the station looks as it is approached. The free-standing, fifty-foot, fibreglass-reinforced epoxy mast sports large mounting clamps to which the electronic boxes and sensor boom arms are attached.

The two lake tower stations located on the Canadian side of the lake are also equipped with autographic radiation recorders.

Several new sensors were utilized in this project. Among them were a miniature dewcel, a dual propeller wind component sensor and a vector pluviometer type dual receiver for the lake tower rain gauge to obviate wind effects. The volumetric rain gauge module is used throughout the system. Most of the other sensors were commercially available or adapted therefrom.

Due to unforeseen development problems the stations were not yet ready for production by October 1971. Therefore, at that time, a reorganization of project responsibilities on a functional cross-organization basis enabled a team action to be built up in which each participant carried out distinct functional roles having manageable responsibility. Overseers coordinated the effort, but no one person any longer knew or controlled the whole project directly. Communications became frank and open. Blame for mistakes was no longer an obsession - finding solutions was the order of the day. Mistakes were openly admitted early enough for corrective action to be taken. Morale was high and excellence on a non-competitive basis was the goal. As a result, the project instrumentation was operational by July 1972.



Figure 3

## NEWFOUNDLAND COLLECTION TAKES TOP AWARDS NUMISMATIC CONVENTION

"It is a tremendous honor for Newfoundland and wonderful for the history of Newfoundland paper money" exclaimed Frank Rowe as he relaxed in his easy chair in his Winter Avenue home.

Mr. Rowe, officer-in-charge of the meteorological station at Torbay, walked off with all the top honors at the joint annual National Convention of the Canadian Paper Money Society and the Canadian Numismatic Society held at the new Holiday Inn in Civic Square Toronto.

Mr. Rowe, who has been collecting Newfoundland paper money and coins for over 25 years and has "just about all there is" had no intentions of attending the convention and exhibition of collections until a few days prior to the event.

The invitation came from the society which early next year will publish Mr. Rowe's account of the history of banking in Newfoundland, published in the Canadian Paper Money Journal. It received such praise that it will be the first account published under a new J.W. Ferguson endowment fund for the advance of paper money. Mr. Ferguson was the founder of the present Canadian Paper Money Society.

When he left for Toronto Mr. Rowe brought along a sample of his money collection to exhibit at the convention. Collectors from all over Canada, the United States and some foreign selections also took part in the show but it was the Newfoundland entry which stole the limelight.

Mr. Rowe claims that he "nearly died" when it was announced that his selection had won first prize in the entire exhibition class for paper money. But the biggest surprise was yet to come. After the final judging had taken place his five-poster entry of old Newfoundland bank notes was declared the best exhibition of the show. He termed it a great honor for Newfoundland.

Mr. Rowe's medals did not end there. For his collection he was awarded a special silver medal by the C.P.M. Society. Only five other people in Canada have been thus honored and these were usually past presidents or other top members of the society. This is only the second time the medal has been awarded for a best collection and the first time a Newfoundland collection was selected.

"It's a real honor for the history of Newfoundland paper money," beamed Mr. Rowe.

The medal itself is a glorious sight. It is two inches in diameter and one-quarter of an inch deep-pure silver. So rich is it that it could easily serve as a mirror if a little larger. One side is engraved with the insignia of the Canadian Paper Money Society which was formed in 1964 for research, education and fellowship in the field of money collecting.

The other shiny surface will be suitably engraved with Mr. Rowe's name and the occasion of the honor.

Twenty-five years is a long time to be collecting, especially something as rare as Newfoundland paper money but Mr. Rowe has managed to compile a complete history of banking in this province from the earliest days when permanent settlement was prohibited.



*Award – Frank Rowe, meteorologist by profession and money collector in his spare time, displays the brilliant silver medal he was awarded recently by the Canadian Paper Money Society for his collection of Newfoundland paper money. Mr. Rowe is the first Newfoundlander ever to receive the award. The two-inch diameter, one-quarter inch thick silver disc rests handsomely in a blue velvet lined box.*

The oldest samples of paper money in his collection are private money bills issued to fishermen and labourers by merchants in St. John's and Placentia in the late 1700's and early 1800's before the establishment of banks.

The first private money note came from the Placentia firm of Saunders, Sweetapple, and Saunders in 1780. This was paid to fishermen before actual settlement in Newfoundland was permitted.

A nine-shilling and eleven-shilling note from Brine's Note days of 1815 are two of three such notes known. The value of the note represents a payment for a quintal of fish in those days.

In 1815 labourers working on the construction of Fort William were paid with a Kough Note, issued by the man who also supervised the building of Government House, the Court house and the prison in Harbour Grace, all of which remain today.

From private notes Mr. Rowe's collection moves to cash notes, beginning with the first notes issued in black and white in 1901. In denominations of 40 cents, 50 cents, 80 cents, \$1 and \$5, these were given as payment to roadworkers.

Also at the exhibition in Toronto were displayed colour note proofs sent to the government for approval before they were issued.

Two posters in the sample include early currency of both the Union Bank and the Commercial Bank of Newfoundland. The former was established in 1854, the latter in 1857. Both private banks were the only two in St. John's at the time and were closed down following the great bank crash of 1894, two years after the great fire which destroyed most of the city.

During the life of both banks, St. John's and Newfoundland saw the change-over in currency from the pound to the dollar system. There was a time when the Commercial bank issued its paper money in both pound and dollar notes which could be used concurrently.

At the time of the crash a Union Bank dollar note was worth 80 cents and a commercial dollar only 20 cents.

The samples which won Mr. Rowe the medals at Toronto are only a small portion of his vast collections which includes a complete set of Newfoundland coins and medals.

## HEART FUND BENEFIT

A double-header softball game featuring the AES Headquarters' Meteorettes vs Radio Station CFRB's Powder Puffs – and AES Meteorites vs CFRB's D.J.'s was played in Toronto in aid of the "Heart Fund".

The CFRB Powder Puffs went ahead from the beginning and proved to be too experienced for the Meteorettes – our gals gallantly went down 12 – 3.

The CFRB's D.J. Team were behind 5 – 1 to the Meteorites after two innings. However, due to several rules introduced during the game that will never be found in any rule book, CFRB ended up winning 12 – 10. To open the game, Mr. J.R.H. Noble received a pitch from Mr. D. Hartford, the President of CFRB. The commentator for the game was Ted Axton, our Director of Sports, who had considerable difficulty analysing some of the more intricate and unusual plays.

Approximately 700 spectators were on hand for the game and \$326 was collected for the Heart Fund. We expect that the game will become an annual event now that the prowess of our teams has been established.



*FOR OPENERS*



*PLAY BALL!!*

*NEW RULES?*



## LA MÉTÉO À LA PORTÉE DE TOUS

La météo à la portée de tous? pourquoi pas!

De plus en plus, le Service Météorologique Canadien prend conscience de l'intérêt sans cesse croissant que le public manifeste envers la météorologie. Dans une région comme la Côte-Nord, la météorologie devient un soucis de tous les jours plus particulièrement l'hiver.

Il y a quelques années à peine/la météorologie représentait pour le profane une science bien mystérieuse et parfois empreinte de charlanisme. Aujourd'hui, on ne se contente plus d'écouter la prévision, mais imbu d'acquérir de nouvelles connaissances, on désire percer ces mystères et découvrir ce monde qui meuble la conversation de tous les jours et qui cependant est encore si mal connu.

Conscient de ce fait votre bureau météorologique en collaboration avec le Service des Loisirs de la Cité est heureux d'offrir aux Sept-Iliens de tout âge l'occasion de découvrir la météorologie et surtout de se rendre compte, non seulement qu'il n'y a rien de mystérieux, mais qu'en plus, elle peut devenir des plus intéressantes pour peu qu'on veuille bien s'en approcher.

Notre intention n'est pas de donner des cours en météorologie, mais plutôt de la mieux faire connaître et de répondre aux nombreuses questions que se pose parfois le profane.

Pour les adolescents, ce sera l'occasion de construire eux-même des instruments servant à mesurer la pression des vents, la précipitation et de participer à des recherches sur le comportement de certains phénomènes atmosphériques. Et qui sait? Peut-être y découvriront-ils une possibilité de carrière qu'ils n'avaient pas encore envisagée?

Pour les adultes, ce sera l'occasion de percer les mystères météorologique et de constater à quel point il est simple de comprendre cette science de discuter du vrai ou du faux de certains dictons comme "Le 3 fait le mois" ou encore les effets de la lune, les méfaits du tonnerre et des éclairs et les menaces de la pollution atmosphérique. Certaines personnes sont plus concernées par la météorologie, je pense par exemple à ceux qui apprennent à piloter des avions légers ou les amateurs de yachting. L'appart de leurs expériences et de leurs observations pourraient certes rendre ces rencontres encore plus intéressantes.

Une fois de plus, Québécois a prouvé qu'elle partage l'esprit de solidarité qui anime notre ville et aussi à la mi-août, un groupe restreint de participants aura l'occasion de visiter un des plus grands centres météorologiques du Canada, c'est-à-dire le Centre d'Analyse de Montréal où s'effectue la météorologie par ordinateur et également le Bureau Météorologique de Dorval d'où émanent les prévisions émises pour toute la province.

L'invitation est lancée! Reste à vous de prouver que nous avons raison de croire que l'expérience valait d'être tentée.

La première rencontre avec les adolescents (et adolescentes il va sans dire) aura lieu le mardi 25 juillet de 2 à 4 heures l'après-midi.

Pour les adultes et les adolescents qui travaillent le jour, ce sera mercredi soir le 26 de 7 à 9 heures.

L'endroit: La maison des Jeunes, 158 Père Divet. Nous y serons! Y serez-vous?

Normand Guérin  
Chef de Service  
Bureau Météorologique des  
Sept-Iles.

## ICE RECONNAISSANCE-ELECTRA MODIFICATION PROGRAM

The end of 1972 will mark the beginning of a new era in the history of the Atmospheric Environment Service's ice program. At that time, two Lockheed Electra aircraft (Fig. I) under contract from Nordair Ltd. of Montreal, will replace the older and slower DC-4 aircraft currently being used in ice reconnaissance activities. The Electra aircraft, which are equipped with turbine engines well suited to the cold weather operations encountered in the program, will be specially modified and equipped for ice reconnaissance roles. Precision navigation equipment and special electronic instruments will be used in aid of visual observations to provide an accurate and effective ice data collection program.

An extensive and costly modification program to prepare these aircraft for their new role is already in progress at Canadair Ltd. in Montreal. Major structural modifications as well as a complete redesign of interior cabin layout are required. Following is a description of the major modifications to be made to each aircraft.

### MAJOR STRUCTURAL MODIFICATIONS

#### Visual Observation Domes

A free blown plexiglass canopy (Fig. II) will be installed on the topside of the fuselage directly behind the cockpit. The Observer will be seated below this canopy in an opening cut in the fuselage skin. The overhead canopy will be sufficiently large to provide ample shoulder and head room for the Observer as well as working space and an instrument panel. The access opening must be sealed with a metal door during aircraft pressurization.

An additional plexiglass blister will be installed on each side of the aircraft over openings provided by removal of cabin windows. These blisters will be used as secondary observing positions. Pressure plugs must be used to cover the openings during aircraft pressurization.

#### Radar Antennae

A large 60" antenna dish for an Echo ground mapping radar system will be installed below the aircraft fuselage aft of the front wheel well. A large, 12' long radome (Fig. III) will house the antenna.



**Figure 1:** *One of two Electra aircraft at Canadair hangar awaiting modifications for new ice reconnaissance roles.*



**Figure II:** *The plexiglass dome is being prepared for installation on the upper side of the aircraft fuselage. A workman can be observed positioned in the opening over which the dome will be placed (background).*



**Figure III:** *The mould prepared for formation of the 12' radome for the radar antenna is examined during an inspection tour.*

An additional weather radar will be installed in the aircraft nose for use as a flight and navigational aid with a PPI remotod to the radar observing station as backup for the ground mapping radar.

#### **Additional Sensors**

Three remote sensing systems will be mounted in the aircraft, each requiring a port hole through the underside of the fuselage.

A three Vinten camera array will be installed in the forward cargo section. The port hole required for the cameras will be large enough to accommodate a pressure strengthened cabin type window.

The infrared line scanner, which will be installed adjacent to the camera array, will require an opening in the fuselage large enough to provide clearance for a full 120° scan. The opening will be covered with a metal plug during aircraft pressurization but will remain open during operational flights.

A laser profilometer will be mounted on the aircraft cabin floor. An 8.5 inch diameter stove pipe type opening will be required through the baggage compartment to the underside of the fuselage for a port hole. The tube will be pressure strengthened and the opening at the cabin floor will be sealed during aircraft pressurization.

## CABIN MODIFICATIONS

### Working Stations

Eight working stations will be provided in the forward section of the cabin. All stations will be interconnected through an intercom system.

*Navigator Station:* This position will be provided with two LTN-51 inertial navigation systems and two omega navigation systems. A navigator will be required initially but this requirement may be waived if and when the navigation systems demonstrate that the required accuracy and dependability can be met.

*Visual Observation Stations:* As previously indicated, three positions will be provided. The primary observing position will require a collapsible seat and an access ladder. Readouts of time, aircraft heading, location, altitude and speed, as well as HF and VHF radio communication facilities will be available at this position. The secondary observing positions will not have readouts for flight data.

*Radar Station:* Observers at this position will use an 18" radar scope for display of the ground mapping radar imagery. A smaller display of the nose radar imagery will be available on a 5" radar scope as backup. Flight data available will include time and aircraft location, heading and altitude.

*Remote Sensing Station:* Controls for the remote sensors, as well as the putput data recorders for the laser and infrared scan systems will be located at this position. Work tables at the position will allow inflight analysis of the data. Flight information such as time, position, altitude and ground speed will also be available.

*Data Preparation Station:* Data collected at visual, radar, and remote sensing stations will be coordinated at this location for consolidation into ice chart and radio message forms.

*Tactical Support Station:* Direct control of VHF and HF radio communications for use in tactical support will be located at this station. An airborne facsimile transmitter for transmission of ice charts to ships will be located behind this position.

### Dark Room

A dark room will be provided for loading and unloading of photographic films and for occasional inflight film processing. A double sink and ample counter space will be available.

### Storage Facilities

Facilities for storage of ice charts, aeronautical maps and photographic material will be available near the working stations. A large container for storing liquid nitrogen, used for the infrared line scan system, will be located in the cabin.

Two large fuel tanks will be installed in the cabin over the wings. The extra tanks will extend the flight range of the aircraft to approximately 3,500 nautical miles. A leak proof outer metal skin will be provided around the tanks for safety.

### **Crew Messing and Rest Area**

A well equipped galley for preparation of hot meals in flight will be located towards the rear of the aircraft. A mess area including a table and five eating positions will be provided. First class passenger seating will be available for ten persons. At the rear of the aircraft built in bunks will provide limited rest facilities for crew members during long flights and in the event of illness.

## **STATUS REPORT OF AES IFYGL ACTIVITIES AS OF AUGUST 31, 1972**

### **SHORELINE STATIONS**

All six shoreline stations operated continuously throughout August. The data from two stations had been run through the PDP 9 computer and are almost ready for "dumping" on the IBM 360.

### **BEDFORD TOWERS**

The Lake Towers off Oakville and Cobourg were in operation throughout August. Problems still existed with the anchoring of the Oswega Tower and attempts were being made to correct this during the last week of August. The Oswega Tower instrumentation has been working excellently and has brought to light the fact that there may be a problem with the dewcell data from the other towers. This is being investigated.

### **PRECIPITATION/RADAR**

This program was fully operational and film data were being processed throughout August. The computer program for producing maps showing accumulations of precipitation over different time intervals is not yet ready.

### **ATMOSPHERIC WATER BALANCE PROJECT**

Following almost five years of preliminary planning and feasibility studies, the operational phase of the Atmospheric Water Balance Project will commence in September. Two trailers for mobile rawinsonde stations at Confederation Park (Hamilton) and Presqu'ile Park (near Trenton) are in place. Equipment and hydro connections should be completed during the first few days of September. Mr. M.S. Webb is coordinating these preparations.

The LORAN-C Locate System at Scarborough is operations-ready. On August 24, a short training course for rawinsonde technicians began at the Upper Air Training School to familiarize operators with the new equipment. Three USAF technicians are also attending this course. Mr. H.L. Ferguson gave a talk on the objectives and scientific aspects of the project and Mr. J.A.W. McCulloch described the general IFYGL program. Technicians M.E. Malone (Hydrometeorology Research Division) and T.H. Cutler (Hydro-

meteorology and Marine Applications Division) are attending the course and will serve as emergency back-up operators during the operational period (tentatively September 16 to December 7).

### **MICROMETEOROLOGICAL PROJECT**

The tethersonde experiment that was to have begun on August 15, suffered equipment damage from a freak thunderstorm just prior to the experiment. However the equipment was repaired and the program put into operation the following weekend. The program will be extended about five days to compensate for the data lost at the beginning of the period.

### **EVAPORATION PANS**

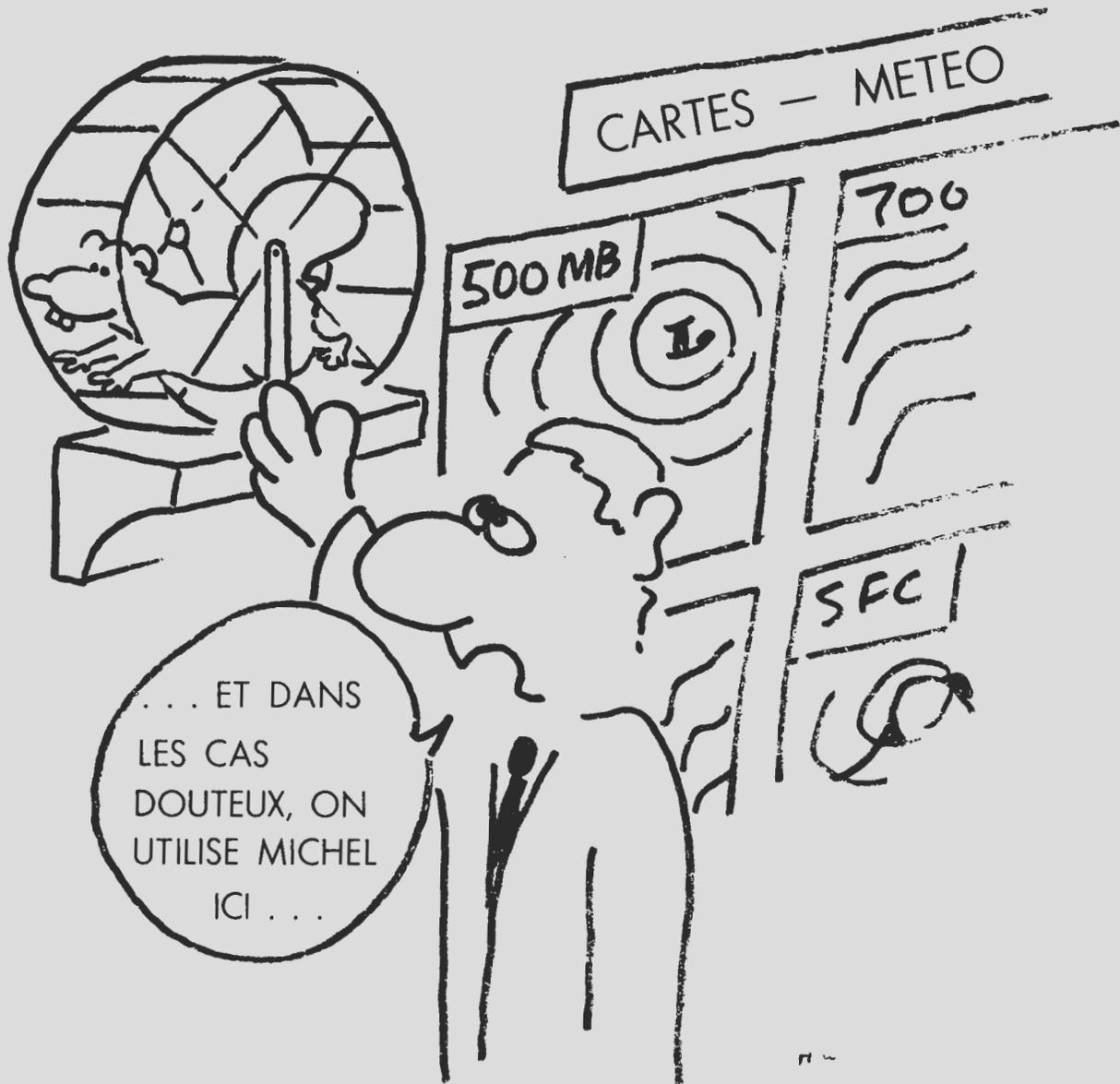
The Class A and X-3 evaporation pans continued to operate throughout August.

### **RADIATION EQUIPMENT**

The radiation equipment installed on the Bedford Towers off Oakville and Cobourg in July continued operational. An amplifier built into the albedometer recording system during the month is producing a much improved data output.

Several problems have been encountered with the temperature sensor on the RF5's and these were being checked out during the last week of August.

All other AES programs associated with the IFYGL were operational throughout August.



## BIOMÉTÉOROLOGIE

### SUGGESTION AWARD

On August 15, 1972, in the Assistant Deputy Minister's boardroom - Mr. J.R.H. Noble (ADMA) presented Joseph (Joe) Karl Pacholik with a cheque for his suggestion award.

Joe who is a met. instructor at ASTS proposed "that certain rented equipment used in the Air Services' Training School be disconnected when not needed for periods in



*J.K. PACHOLIK receiving Suggestion Award from J.R.H. Noble (ADMA)*

excess of one month and that rental charges be paid for only those periods when the equipment is being used.

He also proposed that in view of the change in the training program at ASTS, another three teleprinters and two reperforators could be eliminated as redundant.

Savings realized from these two proposals, less the cost of paper work involved in the project, totalled \$15,155 during the first year of implementation."

This saving earned for Joe – an award cheque of \$800. Congratulations Joe! !

### **EFFECTS OF HURRICANE AGNES IN QUEBEC**

Hurricane Agnes first appeared on the continent in the Pensacola region on the evening of June 20. It then moved slowly northward first intensifying. It ended as a flat low pressure area centred over the Adirondacks, eastern Ontario and southern Quebec.

Its effects on southern Quebec were intensified by a cold front which lay along the St. Lawrence River valley, moving from a position about a hundred miles north of the river on the 21st to just south of it on the 22nd thereafter becoming caught up in the vortex of the tropical storm and ceasing to be separately identifiable. The hurricane was responsible for five consecutive days with rain from the 21st to the 25th with a few

stations also getting some rain on the days on either side of this period. A tornado which caused two deaths and considerable property damage at Maniwaki on the 24th was one of the many manifestations of the energy released by the hurricane vortex. At Ste. Agathe des Monts north of Montreal a 24-hour fall of 3.08 inches was recorded on the 21st, while in the upper St. Lawrence River area winds of over 60 mph were experienced on the 22nd. The strong winds and heavy rains caused wind damage and floods to many communities in the southern sections of the province of Quebec.

A list of daily rainfall amounts for a few representative stations in the area for the period of the storm is shown below. The last column gives the monthly totals as compared to normal values as noted.

#### PRECIPITATION JUNE 1972

<i>Station</i>	<i>Days</i>	20	21	22	23	24	25	<i>Normal Month</i>	<i>Month</i>
OTTAWA			1.95	0.35	0.35	0.20	0.27	3.01	5.24
MONTREAL		0.07	1.01	0.06	0.20	0.33	0.11	3.34	5.30
ST. AGATHE	T		3.08	0.94	0.13	0.34	0.06	3.75	8.56
TROIS RIVIERES	T		1.21	T	T	0.63		3.17	5.62
SHERBROOKE			0.01	T	0.05	0.06	0.02	4.01	5.47
QUEBEC			0.61	0.04	0.03	0.32	0.33	4.18	4.61
SEPT-ILES			0.43	0.46	1.17	0.71	1.49	3.57	7.56
BAIE COMEAU			0.49	0.57	0.12	0.55	0.09	3.90	4.76
MONT JOLI			0.44	0.19	0.03	0.14	0.15	3.01	2.25

#### IFYGL AIR QUALITY PROGRAM

Monitoring of SO<sub>2</sub> and CO<sub>2</sub> concentrations at heights 2 and 8 meters above water is being carried out on the large "Handy Boy", anchored in Lake Ontario about 1 mile off Niagara-on-the-Lake. From these measurements, the vertical gradient of concentration can be determined, and in conjunction with simultaneous measurements of atmospheric turbulence at the same location, it is hoped to infer the vertical fluxes of SO<sub>2</sub> and CO<sub>2</sub> into and out of the water. Precipitation and lake surface water samples are also being taken and will be chemically analysed for trace constituents.

The Air Quality Research Branch conducted the first of a series of aerial surveys to obtain a better understanding of the Meteorological phenomena which influence the dispersion of effluents from area and point sources around Lake Ontario. The first survey lasted five days during the early part of May. The Air Quality Research Branch had one helicopter instrumented with temperature and SO<sub>2</sub> measuring equipment as well as three

automobiles with similar instrumentation traversing at street and highway level in coordination with the helicopter. The Ontario Air Management Branch and DEMR in Ottawa assisted with this project.

One interesting result of this project, presently under study, is the influence of the lake on dispersion from point sources under meteorological conditions conducive to a lake breeze.

#### VERIFICATION SYSTEM FOR REGIONAL HOURLY UPDATE FORECAST MODEL

A special verification system has been developed and incorporated for running routinely in the first version of a regional hourly update system that is operating on a 'midi' computer of the Forecast Research Division at AES Headquarters. The update system operates by utilizing current CMC NWP values and current surface observations, so that the system is not constrained to a 12-hour forecast cycle, but can operate whenever new meteorological information becomes available. In practice, the forecast cycle of the current version is one hour and the verification program has been designed to provide information on the potential and the proper utilization of an updating system in short range weather forecasting. The verification system uses standard scores (e.g.  $S_1$ , rms errors of pressure and pressure gradient, mean errors of pressure and pressure gradient, mean absolute errors of pressure and pressure gradient, etc.) that are accumulated for various forecast periods and also for a set of given forecast times which are continually re-computed with each running of the update system as the valid time is approached.

It has been demonstrated that an update system which utilizes current meteorological data on an hourly basis in a simple prediction model, and with time-dependent boundaries specified by a sophisticated large-scale model, will usefully complement the more sophisticated model working on earlier data at 12-hour intervals. One purpose of the verification program is to establish for what forecast intervals the update system is effective and how its effectiveness decays with increase in the delay after 00Z or 12Z. A second purpose of the verification system is to provide for a comparison of the first version of the update forecast model with a later version currently under development and which incorporates the effects of mountains, large water bodies and roughness of terrain. The third and most important purpose of the verification system is to measure the impact of an update system in the preparation of weather forecasts at large weather offices. Initially, the verification program will compare basic prognostic fields provided by the update system with the prognostic guidance that is currently available in forecast offices. Consideration is being given to making some products of the update system available at one Weather Office, and on a test basis. Under that circumstance the verification program would measure also the effect of products of the update system on the local preparation of prognostic fields. At a later time, the verification system will be extended to scoring forecasted weather elements.

## NOSTALGIA DEPARTMENT

### "Summer of '43"

Written sometime in 1943 at 36 SFTS RAF, Penhold, Alta., by an RAF pilot during a brief visit to the met office for weather briefing. Needless to say the weather situation was "fluid". The Met Officers identified as Wisp and Clowdi will doubtless recall the event.

Here beginneth the first verse of the thirstiest Chapter of the Book of Joe

1. Yes, I have come even unto the house of Met, and great was the babel therein.
2. But, I say unto you, every man that shall enter within these portals, he shall be possessed of devils and shall go about, crying in a loud voice:
3. Woe is me, for Alto Kew and Kew Nim are descended upon me, and I am sore afraid.
4. But then shall the gentle hand of he that is called Wisp be placed upon his head, and he shall say: Be thou not afraid, my child.
5. For verily, verily, I say unto you, many moons have I tarried in this house, yea, even I the great Wisp, and I say that thou art up that which is called Creke.
6. Cast thine eyes around thee, O man of little faith, canst thou not perceive only a light haze of that which is by name Ci, which is sometimes called Cirrus.
7. According to the tablets which are inscribed by the prophets, thou canst learn what is to be for the next few hours, verily, nothing will descend upon us until even the heat increases, and many fronts will mass before your eyes.
8. And it came to pass, as he spake, the mountains quaked, and great was the fall thereof.
9. Then spake the wise elder, Clowdi; Thou, also, art up that which is called Creke, thou must needs pull out thy finger, which thou had kept inserted for the past few hours.
10. Canst thou not see that verily there is a great storm upon us, which was not even prophesied by the false God QL.
11. But I, in my infinite majesty, did know that these things were come to pass.
12. And it was so, and there was great weeping, and wailing, and gnashing of teeth in the house of Met, for that, that was inscribed upon their tablets was again duff, even as always.

Amen.

### FIRST AID CERTIFICATE PRESENTATION

The presentation of St. John's Ambulance First Aid Certificates and pins was made to AES Headquarters staff on August 21, 1972 in the auditorium at 4905 Dufferin St.

Mr. L.T. Campbell officiated on behalf of the Service and congratulated the recipients, lauding them for their speical effort – use of individual energy and resources – and declared it to be an effort of which each one could be proud.

The following employees attended this course:

Mrs. J. Inglehart  
Mr. G. Gunther  
Mrs. O. Orlicky  
Mrs. P. Terry  
Mr. J. Reynolds  
Mr. D. Short  
Mr. J. Dufour  
Mr. P. Ward  
Mr. F. Iviney

Mr. A. Duffy  
Mr. S. Brown  
Miss P. Ginter  
Mr. J. Slater  
Miss M. Karnath  
Mr. G. Giles  
Mr. V.M. Pubrat  
Mr. F. Harris  
Mr. C. Midwinter

Mr. G. Young  
Mr. R. Tsuda  
Mr. W.H. Huxhold  
Mr. R. Bourque  
Mr. D. McKay  
Mr. F. Foster  
Mrs. M. McShea  
Mr. C. Carter  
Mr. C. Videan



Seated: Left to right: Mrs. J. Inglehart, Mrs. P. Terry, Mrs. O. Orlicky, Mr. L.T. Campbell, Mr. S.F. Lucas, Mrs. M. McShea, Miss P. Ginter.

Standing: Left to right: Messrs. P. Ward, A. Duffy, C. Videan, W.H. Huxhold, F. Iviney, G. Giles, G. Gunther, C. Carter, D. McKay, F. Harris.

## CLIMAT LOG BOOKS 1884-1960

The Criddles, - a pioneer Manitoba family, and recipients of our Centenary Plaque, kept official climatological records at St. Albans, Manitoba from 1884 until 1941. Although they officially ended their reporting in 1941, Miss Maida Criddle continued daily records in the same form until the family moved to British Columbia in 1960. This summer the two remaining members of the Criddle family, Miss Maida and Mr. Talbot presented the original log books, dating from November 1884 until October, 1960, to the AES through Mr. J.J. Labelle, A/Regional Director, Central Region - Winnipeg.

The log books will be used to abstract data for the Headquarters archives but then, as we have neither a system nor facilities to properly keep and display such items, they will be donated to the Provincial archives or to a pioneer museum in Manitoba.

### PERSONNEL

August 1972

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

- |              |  |
|--------------|--|
| 72-AES-CC-23 | Engineer 3<br>Specialist Engineer<br>Industrial Climatology Unit CSD<br>P. Châiné                  |
| 72-AES-CC-2  | Meteorology (MT) 7<br>Shift Supervisor<br>Toronto W.O.<br>M. Stauder                               |
| 72-AES-CC-65 | Meteorology (MT) 7<br>Operational Development Meteorologist<br>Atlantic WC, Halifax<br>J.C. Pearce |
| 72-AES-CC-74 | Meteorology (MT) 5<br>Base Meteorological Officer,<br>CFB Cold Lake<br>C.R. Finlay                 |

The following transfers took place:

- |                 |  |
|-----------------|--|
| D.R. Smith MT 2 | From: Canadian Forces Base Chatham<br>To: Canadian Forces Base Summerside    |
| J. Dublin MT 3  | From: Alberta Hail Research Project<br>To: Atlantic Weather Central, Halifax |

The following people reported for educational leave:

**M.Sc. (Inventory B)**

S.R. Hollett  
P.S. King  
M.J. Leduc  
V.R. Swail  
L.T. Winstone

**M.Sc. - University of Saskatchewan (1972-74)**

D.J. Bauer

**University of Alberta (1972-74)**

P.J. Kociuba  
G.R. Schram  
G.S. Strong

**McGill University (1972-74)**

G.H. Allard  
J.N.F. Brunet  
L.M.D. Burns  
T.K. Won

**University of Toronto (1972-74)**

T.R. Allsopp  
S. Lapczak  
L.J. Wilson

**Educational Leave (Ph.D. Studies)**

L.A. Barrie  
C.B. Chouinard  
G.J. Fuller  
J.E.D. Reid

Pamela Curson has recently joined the Atmospheric Environment Service as an Administrative Trainee in Personnel, Staffing Area. She comes to us after spending the summer working on special projects for the Post Office. Pamela graduated from Trinity College, University of Toronto in June 1972 with an Honours BA in French and German. She numbers drama, skiing and travelling among her interests.

TRIVIA

Read This Later  
San Francisco Examiner

The Procrastinators Club of America is an organization whose purpose is to promote the practice of putting things off. It is a philosophy that decries deadlines, promotes an unhurried way of life and views all schedules with relaxed detachment.

In pursuit of its purpose, the club has proclaimed "Be Late for Something Day" in order to "create a release from stresses and strains resulting from a consistent need to be on time."

Widespread observance of the occasion would have a calming effect on the country.

The special day was yesterday. This endorsing editorial thus runs a day late in keeping with the spirit of the occasion.

\* \* \*

"To err is human; to really foul things up requires a computer."

\* \* \*