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# ZEPHYR

OCTOBER 1971 OCTOBRE

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1971

**ZEPHYR**

**OCTOBER 1971**

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**ANDREW THOMSON D.SC., M.A., O.B.E. 1946-1959**



Andrew Thomson the eldest of five sons of William and Georgina Thomson was born near Owen Sound, Ontario on May 18, 1893. His mother, Georgina Esplen of Scottish parentage, was born near Port Elgin, Ontario; his father William Thomson was born at Bannockburn, near Stirling, Scotland and his brothers and sisters settled on the farm near Owen Sound on which he subsequently lived through his long life.

Andrew Thomson received his elementary education at home, and entered the Owen Sound Collegiate Institute in 1906. He began the Honour Course in Physics in the University of Toronto in 1910, which had just been established by Prof. J.C. McLennan, later Sir John McLennan. Owing to an attack of scarlet fever which weakened his heart for the rest of his life, he had to remain out of university for a year but graduated with first class honours in 1915 and secured a masters degree in 1916. He was awarded a Townsend studentship for 1916 by Harvard University.

In May 1917 he joined the staff of the Department of Terrestrial Magnetism (D.T.M.) of the Carnegie Institution of Washington (C.I.W.) where he was employed in earth current investigations. From November 1917 to May 1918 he was loaned by the C.I.W. as a mathematical aide to the inventor Thomas A. Edison, who, during World War I was President

of the U.S. Naval Consulting Board. Thomson always considered the experience of sitting beside the great inventor the most interesting experience in his life although it entailed working twelve hours a day on weekdays and six hours on Sundays. Mr. Edison would not allow anyone to use a slide rule in his office as it seemed many years previously this mathematician had made an error of the order of ten which was attributed to the use of a slide rule — also Mr. Edison would not allow anyone to smoke cigarettes although he himself chewed tobacco. When Mr. Edison's son Charles, of whom he was very fond, got married in Edison's old Florida home, Mr. Edison did not attend the wedding and told his assistants that the Germans were not going to stop for Charles wedding and neither would he.

Mr. Edison's health gave way through his long hours of work and he returned to his home at East Orange, New Jersey, and Thomson went back to work at the D.T.M. where he was assigned to take observations at Lakin, Kansas on the atmospheric electric effects of a total eclipse of the sun. After serving for a very short time in the U.S. Army in the kitchen police he was transferred to the U.S. Air Force with the rank of aeronautical engineer with responsibility for a suitable compass for various types of aircraft and its location in the aircraft. As Germany surrendered on November 11, 1918, Thomson was only eight months in this air plane work when he returned to the D.T.M. He was assigned to take observations on the atmospheric electric effects of an eclipse of the sun of relatively long duration (of over 5 minutes) at Sabral in the interior of Northern Brazil on May 29, 1919. On his return to the D.T.M. Washington D.C. Thomson was assigned to the observational program in atmospheric electricity to be carried out on the non magnetic ship Carnegie during her sixth voyage around the world. The observations included the daily measurement of atmospheric electric potential gradient, positive and negative conductivity of the air, ionic content of the air, measurement of the radioactive content of the air and cosmic or penetrating radiation.

The Carnegie was a sailing ship (brigantine) constructed at the expense of Andrew Carnegie. The ship's length overall was 155 ft and 125 ft at the water line with 246 registered tonnage. The four anchors of manganese bronze weighed 5500 pounds, the cooking ranges were bronze and copper and the cutlery of Mexican silver. The Carnegie had a spread of 13,000 square feet of canvas and the foremast stood 122 ft above the water line. The personnel consisted of a scientific and sailing staff of ten men and a crew of 13.

The Carnegie sailed from Washington D.C. in October 1919 and after a voyage of 75,000 miles returned to Washington in November 1921.

During this long voyage before the days of radio weather and time signals, the Carnegie encountered the old time hazards of sailing including going through the eye of a tropical hurricane and the proximity of icebergs.

The quartz fibre electrometers and gold leaf electroscopes required much care to preserve their insulation in the moist atmosphere with waves breaking over the ship. In the equatorial regions with sunshine and less ship motion the maintenance of instruments was relatively easy. Probably the most interesting results were that over the whole earth the potential gradient had its maximum value about the same time, 17 hr. G.M.T., also the penetrating radiation had about the same value over the earth and the radioactive material in the air decreased sharply at a distance from the continents.

Very shortly after his return to Washington Thomson was assigned to duty at the geophysical observatory at Apia, Western Samoa. After World War I the observatory which had been founded in 1902 by the University of Gottingen and had been operated on a large scale since 1912 was turned over to New Zealand in 1921. New Zealand had received a

mandate for the government of Western Samoa from the League of Nations. Until the end of the war the observatory had carried on a first class program in terrestrial magnetism, seismology and meteorology. After 1920 the observatory received grants from the Carnegie Institution and the British Admiralty and was directed by New Zealand personnel. Minor problems had arisen and Thomson was loaned temporarily. However, the situation was smoothed out, New Zealand took over full financial responsibility, Thomson was appointed Director and the scientific program was extended in meteorology by a long series of pilot balloon observations, to investigate the varying heights of the trades and antitrade winds throughout the year. The Upper Wind Observations were published in a brochure and hourly values of magnetic declination, total force and vertical magnetic force and the meteorological elements were all published in yearly reports.

Thomson left the observatory in 1929 on account of illness and joined the rapidly expanding New Zealand Meteorological Service as aerologist.

In 1929 Thomson obtained special leave of absence to study meteorology in Germany and Norway. Accordingly from October to early January 1930 in Germany, Thomson studied general meteorology and more particularly measurements of winds up to 4 km at Hamburg, Lindenburg, Frankfurt and Friedrichshafen. He then went to Bergen and Oslo from January to July to learn at first hand the procedures and theory of frontal analysis in weather forecasting.

Thomson returned to the Department of Terrestrial Magnetism C.I.W. to work up for publication the pilot balloon observations taken on the last voyage of the "Carnegie" This report was published in March 1943.

Thomson returned to Canada in December 1931 and on January 19, 1932 was appointed a meteorologist in the Meteorological Service and Head of the Physics division. His first task was the organization of the program and personnel of the second international Polar Year 1933-1934 in which Canada had four stations, Coppermine, Meanook, Chesterfield Inlet and Cape Hopes Advance. At Coppermine Jacobsen obtained a representative series of radiosonde ascents, at Meanook Vestine made the first observations of noctilucent clouds in America, Balfour Currie measured the height of the aurora for the first time in Canada and Davies had charge of an extensive meteorological program at Chesterfield Inlet. Detailed results were published in three volumes in 1940. Thomson's main work was to introduce basic theory and frontal methods of weather forecasting into the thinking of the meteorological staff. This took between five and ten years with the never failing support of the director Dr. John Patterson.

There was much to be learned about the physical properties of North American air masses before reasonable forecasts could be made based on the transformation of these air masses.

Short courses at the meteorological office by Bjerknes and Patterson were of great help but most of all the lecture courses of Bernhard Horowitz were of the greatest importance in establishing the dynamic bases of the circulation of the atmosphere.

Dr. Patterson and Prof. Burton head of the Physics Department University of Toronto established a post graduate course in meteorology leading to the M.A. degree. Thomson gave the lectures in meteorology but at the beginning the students were burdened with too many heavy mathematical courses. In order to maintain close connection with the

advances being made in the nineteen thirties, Thomson made frequent visits at his own expense to the Massachusetts Institute of Technology and in 1937 a six weeks visit to the Meteorological Services in Britain, Norway and Germany. There was also much time spent in collaboration with a Civil Service Representative in the examination of candidates for tele-typist and observer positions.

Among other incidents in the thirties in which Thomson was concerned was with the change in the synoptic code employed in Canada and United States using figures instead of the letters of the alphabet. The new figure code for use in the synoptic messages, now prepared four times daily, was developed in 1½ days in collaboration with the assistant director of the U.S.W.B. The new figure code was employed in North America until the International figure code was adopted during World War II. Thomson was engaged at Botwood Nfld. in making the arrangements for the first two or three transatlantic flights from Botwood.

Thomson collaborated with Col. Hubbard of the U.S. Air Force in initiating arrangements with the United States and Canadian Government Departments which led to the establishment of the joint Arctic Weather Stations.

With the transfer in 1936 of the Meteorological Service to the Department of Transport Thomson was put on the permanent staff and on February 8, 1940 he was appointed assistant controller at a salary of 4020 dollars per annum.

Sometime after World War II was declared the Empire Training scheme for pilots was set up in Canada to train pilots from all over the Empire for war service in Europe. This necessitated pilot training schools all across Canada staffed with those who could discuss the weather forecast in detail and who could teach elementary meteorology, and required the establishment at Toronto of crash courses to train university graduates in meteorology for their work at Empire Training Schools.

The graduates of the crash courses in meteorology proved satisfactory at the Empire Training schools and many of them, after the end of World War II, continued in the Canadian Meteorological Service. For his part in organizing meteorological services for the Empire Training Scheme Thomson was awarded the Order of the British Empire on December 1, 1946. Dr. Patterson retired from the position of Controller and Thomson succeeded him. Between the outbreak of World War II and April 1, 1946 the Meteorological Service increased approximately five times its prewar size. This required the reorganization of the head office staff and the allocation of Canada into six areas each of which was more or less its own weather service for aviation and public weather. At the head office the organization was divided into six divisions with a chief for each who, all except two, held this position until Thomson retired in October 1959. The divisions and chiefs were as follows: Forecast - P.D. McTaggart-Cowan; Climatology - A.J. Connor retired and succeeded by C.C. Boughner, Instrument - R.C. Jacobsen and later H.H. Bindon; Basic Weather - D.C. Archibald; Administration - J.R.H. Noble; Research and Training - Dr. E.W. Hewson resigned, and was succeeded by Dr. D.P. McIntyre.

The whole personnel of the Meteorological Service had to be reclassified with the new duties of each individual stated as they were in the new Peace Time organization. Within a year or two the six divisions, which had been set up in 1946, had settled down to the duties assigned to them, each division making expansions and improvements in response to the calls made upon them but limited by the acute shortage of professional staff.

In 1947 the historic event for the Canadian Meteorological Service was the meeting of all ten meteorological commissions of the International Meteorological Organization (I.M.O.) at Toronto from August 4 to September 13, 1947. There were 44 countries represented by 189 delegates.

- to be continued -

### CONGRATULATIONS

GLOBE & MAIL, Monday, October 25, 1971.

<b>CANADA LIFE</b>	
<b>Showers</b>	 Salutes the Atmospheric Environment Service's Centennial
<b>TORONTO HIGH</b> Details on page 2	
<b>60</b>	
A.E.S. The Nation's Weather Service	

### LANCEMENT DE "LA MÉTÉO"

par Alcide Ouellet, B.A., B.SC.A., M.A.

Qui ne connaît pas Alcide Ouellet? Depuis plusieurs années, c'est "La Voix de la Météo" que l'on écoute religieusement tous les matins sur les ondes de Radio-Canada.

Dans son premier ouvrage, qui vient de paraître conjointement aux Editions de l'Homme et aux Editions Radio-Canada, le directeur du bureau de la météorologie de Dorval s'applique à mettre cette science à la portée de tous.

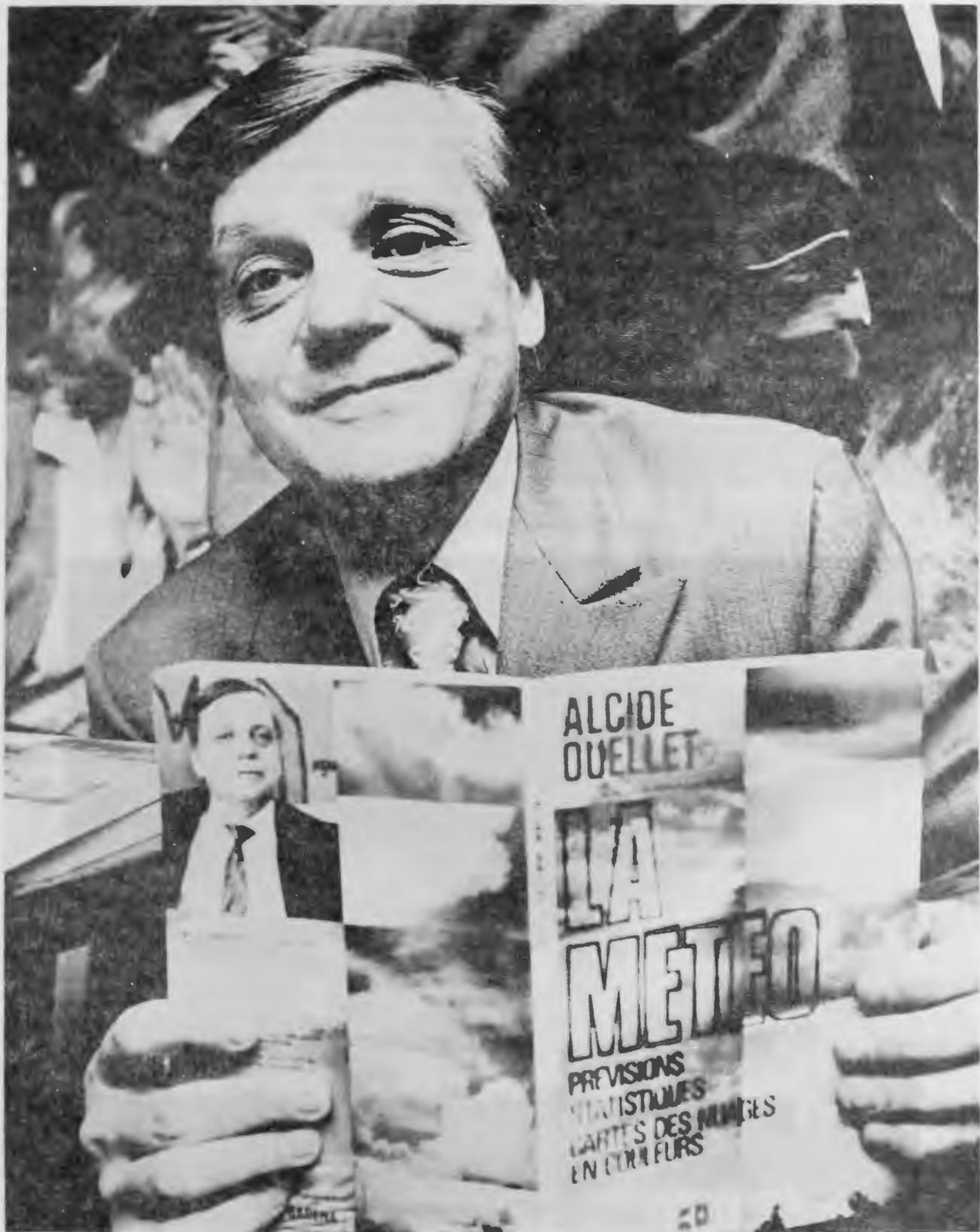
Voulez-vous savoir comment organiser vos affaires pour que le temps ne vous joue pas de tour? Voulez-vous savoir quand et où aller en vacances (sans vous faire mouiller)? En consultant l'ouvrage d'Alcide Ouellet, vous mettrez toutes les chances de votre côté!

"LA MÉTÉO" qui comprend de nombreuses photos en couleurs, est en vente partout au Québec au prix de \$3.00 l'exemplaire.

On peut également se le procurer en s'adressant à Radio-Canada ou auprès du distributeur des Editions de l'Homme:

L'Agence de Distribution Populaire Inc.,  
1130 est, rue de La Gauchetière, Montréal 132 (523-1600).





### TORNADO IN TILBURY WEST TOWNSHIP, JULY 1971

A tornado in Tilbury West Township, July 17, 1971 lasted from approximately 1.45 to 2.30 p.m. It began on Lot 15, Concession 10, and moved northward, wavering back and forth across Lots 14 and 15. (A Department of Highways, Ontario, map of Essex County would be of assistance in locating this occurrence). It did no damage other than to bean and corn crops, through which it cut swathes. A very localized thunderstorm with heavy rainshowers and violent winds, no more than two or three miles in diameter at the most, was in progress. The tornado was seen by a farmer located as far away as the 10th Concession of Mersea Township.

The above information was obtained from Mr. Glen Waites, RR 2 Comber, Ontario, who lives on a farm nearby. Mr. Waites is interested in weather services and measures rainfall for the Agriculture Representative, Essex County, Essex, Ontario. It is interesting to note that Mr. Waites, a teenager then, vividly remembers the 1946 Windsor tornado. He relates that he and his father found pieces of metal debris from that occurrence, on the "home place" - his father's farm - which is quite near the farm which Mr. Waites now owns. He also relates that he observed a funnel cloud in the summer of 1947, while working in the fields. Two barns nearby were damaged on that occasion, one being twisted on its foundation and the other having one corner demolished.

### WINDSOR TORNADO - 1946



TILBURY WEST TOWNSHIP TORNADO - JULY 1971



The Tilbury West Tornado pictures were taken by Messrs. Carmen and Douglas Strang, 9th Concession of Tilbury West, Lot 15, from their yard. Mr. Waites advises that these two brothers, who farm on that location, have made photography their hobby.

These pictures are supplied through the courtesy of Mr. Waites' mother, Mrs. Roy Waites, who had obtained them as copies from the Strangs.

### PRESENTATION OF CENTENNIAL PLAQUE AT GOOSE BAY

The Regional Director, on the 29th of September, presented a Centennial Plaque to Col. D. Jackson of the U.S.A.F. at Goose Bay in recognition of the cooperation and support provided by various segments of the U.S.A.F. over a period of thirty years.

The presentation was made at a dinner in the U.S.A.F. Officers' Club with senior representatives of all military forces, the Officer in Charge, Goose Weather Office and their wives in attendance.



## PRESENTATION OF CENTENNIAL PLAQUE AT TORONTO

A centennial plaque was presented to Upper Lakes Shipping Ltd. on Wednesday, October 20, at their Head Office in Toronto. This award was made because of their co-operation in providing weather observations from their vessels operating on the Great Lakes.

There are 13 vessels owned by Upper Lakes Shipping Ltd. which provide observations regularly. Two of these the GORDON C. LEITCH and the JAMES NORRIS were also selected for their receipt of centennial plaques by the Headquarters Marine Section for the excellent quality of their observations.

The presentation was made by George Pincock, Regional Director of the AES in Ontario.



**Left to Right:**

*Capt. Jim Hartford, Shore Captain Lakes Operations; G.T. Meek, P.M.O., Ontario; George L. Pincock, Regional Director, A.E.S.; Captain D. Lamb, Shore Captain Ocean Operations; Captain W. Hookey, Vice-President, Operations Department.*



## LA DANSE DE LA PLUIE

H.W

### CONSERVATION TERRESTRIAL COMMITTEE (CT)

Mr. G.A. McKay is a member of the Conservation Terrestrial Committee of the Canadian Committee of the International Biological Programme (CCIBP). Support has been given for the preservation of Identified Ecologically Unique Areas and recommendations made that such areas should be provided with instrumented monitoring systems to identify the climatic dynamics of the ecological system as an index to possible climatic change and as a means of estimating potential productivity. More complete monitoring is required in areas sensitive to ecological change and surveys are necessary of the areal variation of meso and microclimates which occur within ecological areas.

## DEMONSTRATION AND BRIEFING ON LORAN C LOCATE SYSTEM

One of the main projects for the International Field Year for the Great Lakes (IFYGL) is a study of the atmospheric water balance over Lake Ontario to be carried out during the fall of 1972. The principal agencies involved are the Atmospheric Environment Service, and NOAA Center for Experimental Design and Data Analysis, Rockville, Maryland, and the United States Air Force. The use of Loran-C Locate System for tracking rawinsondes has been under consideration for some time since this method could provide much greater accuracy in wind measurements than the GMD-2 equipment. On October 20, Mr. G.L. Klein of the Instrument Division and Mr. H.L. Ferguson of the Hydrometeorology Section attended a briefing and demonstration of the proposed system. A rawinsonde was released late in the morning and tracking and meteorological data were recorded in analogue and digital form. For the demonstration digital output was on punched paper tape at 1-second intervals. The tape was later processed to provide a printout of the data. Following the successful demonstration a decision has been made to proceed with the installation of the Loran-C Locate System for the project.

## LES SERVICES DE METEO A SEPT ILES: UNE EXPANSION RAPIDE

Au total 249 appels pour des informations sur les conditions et les prévisions de la température en janvier dernier au bureau local des services météorologiques. En juillet dernier à ce même bureau 1,000 appels téléphoniques.

Voilà un peu plus d'un an que le bureau météorologique ouvrait ses portes à l'aéroport de Sept-Iles. A ce moment-là, il y avait une seule personne M. Réal Franc.

Peu de temps après, arrivait M.A. Lépine que plusieurs Septiliens ont connu. Ce dernier devait demeurer neuf mois avec le bureau local avant d'être nommé au bureau régional.

Aujourd'hui quatre personnes assurent du lundi au vendredi un service quotidien de 16 heures. Nous espérons dans un avenir rapproché voir l'équipe augmenté pour nous permettre de mieux servir cette population du nord-est Québécois.

Toute cette expansion est sans doute due au fait que les représentants du bureau local tentent d'informer le plus possible, la population, qu'elle a un service de météorologie qu'elle peut utiliser. Si le travail est long et ardu, on lui reconnaît déjà des fruits.

Les autres services que plusieurs Septiliens ont pu apprécier furent les cours de base en météorologie donnés aux élèves pilotes d'avion, cadets de la marine, les visites organisées au bureau météorologique et les conférences, prononcées devant les organisations locales.

Nous pouvons avancer que depuis l'établissement du bureau météorologique les organismes locaux et la population en générale ont su apprécier nos services et nous cherchons à les améliorer constamment.

L'Equipe de Sept-Iles

## OIL ON SABLE



Sable, the unique sandspit in the western Atlantic Ocean, possesses a remarkable and romantic attraction for geographers, geologists, botanists, and travel connoisseurs throughout the world. It has also attracted oil drilling experts, and headlines, of largest print, in mid-October, announced the finding of oil in commercial quantities following several months of intensive drilling on the western tip of the island.

It is a treeless, cheerless bit of sand, some fifty miles long at low tide but shrinks to one-half that length as the tide reaches a peak. Breadthwise is a mere spitting distance. It is the home of wild ponies, of unique fauna, of rare nesting birds such as the Ipswich sparrow. Shifting sands, and its watery environs contain the shattered remains of many tragic wrecks. It is aptly named the graveyard of the Atlantic and ironically now becomes the birthplace of fresh hopes for economic prosperity for eastern Canada.

The Ministry of Transport has maintained facilities on the island for many years. Away back in 1801 life saving stations were established on either end of the sand bar and lighthouses were built soon after. They were maintained by the few residents of the island placed there for that purpose, until 1960 when the lights were automated and serviced occasionally by ship from Halifax.

The Meteorological station began in 1891 and now its staff of a dozen technicians form the semi-permanent population of the island although occasionally joined by scientists and support staff bent on study of the unique flora and fauna of the island. Lately the intrusion by geologists, drilling experts, and construction men has added to the variety of life and to the population. It also poses the threat of pollution of several kinds and major disturbance of the surface which is prone to rapid erosion by wind and wave unless sodding is maintained.

Both the surface and upper air weather observing stations are most important and augment the network for the northern hemisphere uniquely since Sable is one of the few fixed oceanic sites in the north Atlantic.

For some years now the major activities of the island have been controlled by the weather and marine services. When exploitation of the oil reserves takes place, problems will arise with the addition of many more persons on an island which is inhospitable at its best. Erosion prevention, disposal of wastes, protection of bird and animal species, possible oil spills, all will be problems which must be dealt with effectively.

The plans for making the island into a National Park are most appealing but the benefits of the wealth to be derived from the valuable hydrocarbon fuels, some miles under the deep sands of the island, may modify them drastically.

The operation of the Sable observing site by the Atmospheric Environment Service has been unique and largely autonomous. The Service has found itself involved in attempting to preserve the lives of the famous Sable ponies when unique winter conditions of an ice encrusted surface deprived them of food and led to hay lifts. It has been obliged to create sod, and to plant suitable shrubs to bind the soil and reduce erosion. It has had to arrange airlifts of sick staff members to Halifax, about 100 miles distance. It has encouraged scientific study by helping university departments, which send scientists and staff to the island for research activities. The staff has always continued to supply most valuable weather data to forecast offices and climatological banks throughout North America and Europe, whatever the conditions.

A valuable observing site, a unique and fertile field for scientific study, an off-beat geographical accident - desolate but attractive, Sable now threatens to become more of a problem with the finding of oil. Preservation and continuation of the weather observing program will become even more difficult than in the past, and our problems threaten to multiply.

**COAL CARRIER TO CARRY WEATHER MAN AS WELL  
VANCOUVER DAILY "PROVINCE" - OCTOBER 7, 1971**

When the Canadian Pacific coal carrier W.C. Van Horne sails on Saturday from Port Moody for Japan she will be the first commercial ship to have a Canadian weather observer posted permanently aboard.

He is Denis Engemoen, a Saskatchewan man with two years experience in the off-shore weather ships, and he has been posted aboard by the atmospheric environment branch of the department of the environment.

The W.C. Van Horne will augment the work of the permanent weather ships stationed at Ocean Station "Papa" 900 miles west of Vancouver Island, filling the gaps of many areas in the North Pacific not now under observation.

Twice a day Engemoen will release a helium balloon into the atmosphere from the ship's after deck. It will carry what is known as a radiosonde instrument, suspended from a long cord.

The information received from the radiosonde is transmitted twice daily to the government weather station at Port Hardy, where it is incorporated into the weather forecast for the entire Pacific region. If the ship is west of the international date line, the information will be radioed to a Japanese station.

The W.C. Van Horne is on the regular coal run between Vancouver and Japan and is expected to make a round trip about every 28 days.



*Helium tanks and balloon filling shelter W.C. Van Horn  
October 6, 1971*

The arrangement for a weather observer to sail on the W.C. Van Horne was made with Canadian Pacific Steamship Ltd. of London, operators of the vessel, which has British officers and a Spanish crew.

The department of transport supplies a technician, and CP Ships provides the launching platform, accommodation, office space, and messing at a nominal rate.

Since the balloons have to be filled from helium bottles on deck in all weathers, a sheltered platform has been welded to the ship's after deck, just abaft the bridge, eight feet square and ten feet high.

It consists of a pipe framework, hung with heavy plastic curtain material, which it is hoped will withstand the mighty blasts of the north Pacific. Each of the balloons is six to seven feet across when it is launched, but it expands as atmospheric pressure decreases.

The shipping company has provided two cadets' cabins for Engemoen, one of which is his living quarters, and the other is office space where he keeps his technical instruments and computes the twice-daily weather report.

There are also British and American commercial vessels with weather observers aboard, notably the British MS Sugar Producer of the Sugar Line and the American tanker Montpelier Victory.

### CALVIN HARLEY – WINNER OF MOT SCHOLARSHIP FOR 1971

Calvin Harley, the son of Ralph Harley, Supervisor of Observing Standards at AES Headquarters has been declared one of six winners of MOT scholarships for 1971. This year was the last in which the dependents of AES personnel could have their names entered in the Scholarship Program.

A cheque for \$500 was presented to Calvin by Mr. J.R.H. Noble, Assistant Deputy Minister, of the AES at a small ceremony prior to a luncheon held at AES Headquarters for Calvin and his parents. In making the presentation, Mr. Noble remarked that almost every year, since the inception of the Scholarship Program, the sons and daughters of the Services employees had been successful in gaining one of the scholarships and this reflected most favourably on the academic attainments of these young people.

Calvin is presently attending the University of Waterloo and is studying science with the aim of specializing in physics. He is the fifth of Mr. and Mrs. Harley's seven children, and was an outstanding athlete and student at the Thornlea Secondary School which he attended. He was also co-president of the student association and played trombone in a school musical group.



## TRIVIA

Can you name it? (a reference to the sculpture outside AES HQs).

I don't say I understand  
The references to Hindustan  
Nor does it honestly relate  
To Holiness in Triplicate:  
*A divisive, isolated tower*  
*With peaceful torment, triple power*  
Calls forth strange concepts, of a kind  
That contemplation blows the mind –  
Some meaning though, I can select  
For those of humbler intellect –  
The water, fire and air are just  
Since rust drops off with every gust.

### Some Notorious Hurricanes

**THE MOST EXPENSIVE:** Hurricane Camille in August, 1969. It hit Cuba, the Gulf States and Virginia, causing \$1,420.7 million worth of damage and leaving 365 dead or missing.

**ITS CHIEF RIVAL:** Hurricane Betsy in August, 1965. It passed over the Bahamas, Florida and Louisiana, causing \$1,419.8 million worth of damage and killing 76.

**THE MOST-DEADLY HURRICANE:** In East Pakistan in November, 1970, with 200,000 confirmed dead but with unofficial estimates of the toll going as high as half a million.

**THE MOST-DEADLY HURRICANE IN THE U.S.** At Galveston, Texas, in 1900, with 6,000 deaths.

**THE MOST-PROLONGED HURRICANE:** This year's Hurricane Ginger. It was classed as a hurricane on Sept. 11 and lasted until Oct. 2.

**THE MOST SEVERE IN CANADA:** Hurricane Hazel in November, 1954. Total damage was put at \$251.6 million, of which \$25 million was in Canada. Eighty Canadian deaths were also recorded.

**NEAREST THREAT TO MONTREAL:** The Great New England Hurricane of Sept. 21, 1938. It caused a storm tide along the southern New England coasts, extensive forest damage in Maine and New Hampshire, high winds in the Eastern Townships and heavy rain in Montreal.



**A PHOTOGRAPHIC CALENDAR**  
**OCTOBER 25-31, 1971**

*Wine and Cheese – October 25*



*The Symposium – October 26-28*



*The Banquet – October 27*



*The Dedication – October 29*



*The Open House – October 30–31*



*The Open House – October 30–31*



*The Open House – October 30–31*



*The Open House – October 30–31*

PERSONNEL

October 1971

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

Competition 71-MET-CC-44    Meteorology (MT) 7  
   Operational Development Meteorologist  
   W.O. Goose Bay  
   – P.C. Haering

Competition 71-MET-CC-36    Meteorology (MT) 4  
   Ice Forecaster  
   Ice Central, Ottawa  
   – W.H. McRuer  
   – T.F. Mullane

The following transfers took place:

B.D. Brodie	– To	22 NRWC North Bay
	From	METOC Centre, Halifax
R.H.W. Hill	– To	METOC Centre, Halifax
	From	Ice Central, Halifax
W.E. Markham	– To	Ice Central, Ottawa
A.P. Beaton	From	Halifax
R.L. Jones		
H.J. McCabe	– To	W.O. Resolute
	From	W.O. Edmonton
C. Odegaard	– To	W.O. Churchill
	From	W.O. Resolute
D.G. Schaeffer	– To:	Scientific Support Unit, Pacific Region, Vancouver
	From	Climatology Division AES
R. Swail	– To	CFB Shearwater
	From	METOC Halifax
W.D. Wyllie	– To:	Scientific Support Unit, Ontario Region, Toronto
	From	W.O. Malton