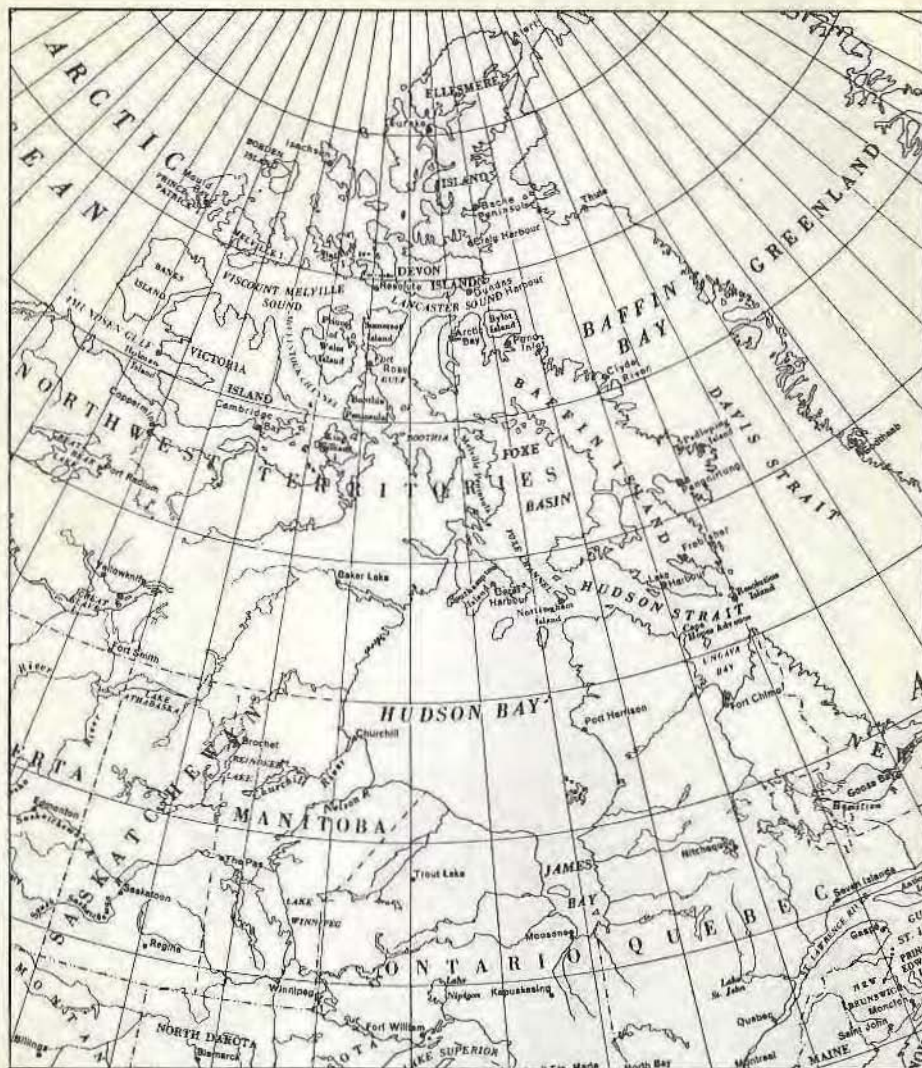


# **WEATHER EYE** **on the ARCTIC**



**METEOROLOGICAL DIVISION**  
**DEPARTMENT OF TRANSPORT - CANADA**



Map of Canadian Arctic Islands  
showing Location of Weather Stations

The author, R. W. (Bill) Rae, is head of the Arctic Section of the Meteorological Division, Department of Transport. He spent two years in the Far North as Officer-in-Charge of the joint Canadian - U. S. weather station at Resolute, Cornwallis Island, N. W. T. Since then he has flown back three times on inspection trips to Resolute, Eureka, Isachsen, Mould Bay and Alert and is thoroughly familiar with weather and life in the Arctic.



On ice-bound islands in the Canadian Arctic, uninhabited even by Eskimos, small weather outposts have been established in order to obtain first-hand information from the source region of the Arctic air masses which sweep over the prairies many times each winter. The increase in dependence of long-range weather forecasting upon a thorough knowledge of Arctic conditions has stimulated this drive to establish permanent weather bases farther and even farther north to the outermost fringe of islands bordering on the Arctic Ocean. The location of these northern outposts is shown on the map on the opposite page.

The trials and hardships which Arctic explorers of old had to endure are almost beyond belief for the Arctic exacted a heavy toll of the daring few who ventured to probe its secrets. The operation of modern Arctic weather stations, however, does not resemble the enforced winterings of former Arctic explorers any more than a trans-continental flight resembles a trek across the prairies by ox-cart. Cold frost-lined holds of sailing ships have been replaced by prefabricated insulated houses, heated by thermostatically-controlled oil burning furnaces. Flickering oil lamps have given way to diesel-generated electric power. The staples of Arctic diet are no longer tinned beef and lime juice but well balanced diets, including fresh meat and vegetables and, an added safety factor, vitamin pills.

One of the most difficult problems to overcome in choosing a site for an Arctic weather station is the provision of an adequate year-round fresh water supply. An ideal location is near a good-sized lake which permits water to be hauled summer and winter. Various methods have been used to keep a water hole open all winter. A simple one is to erect a small hut similar to a Lake Simcoe fishing hut, on the ice over the water hole. If the air in the hut is kept at an appropriate temperature by means of a small stove, the water hole neither increases nor decreases in size.

The station at Isachsen on Ellef Ringnes Island has no body of fresh water nearby. In the winter months, water is obtained by melting snow blocks and in the summer by melting old sea ice. (SEE PLATE 1). Fresh sea ice is quite salty, but after one or two years, it becomes reasonably fresh and can be used as a source of fresh water.





PLATE 1

### Cutting Snow Blocks for Drinking Water

Although surprising changes have taken place in man's methods of adapting himself to the Arctic environment, the changes which have occurred in the Arctic itself in the past few hundred years are insignificant. Polar bears may still be seen roaming the icy wastes near the weather stations. The long winter night and corresponding continuous summer daylight are still as fascinating to Arctic visitors as in the past. Accounts of weather phenomena, storms, blowing snow, low temperatures and so on reported in the journals of 19th century explorers would apply equally well today. The scenery still consists of snow-covered wastes in winter and bleak looking terrain in Summer.

A variety of wild life may be seen in the vicinity of most of the Arctic stations. Musk-oxen, wolves, Arctic foxes and seal are often seen and polar bears are not uncommon visitors. Polar bears will ordinarily turn and flee when approached, but this is not always the case. Shortly after the station at Resolute on Cornwallis Island was established in the fall of 1947, one of the radio operators was attacked without warning by a polar bear only ten feet from the mess hall door. Fortunately, the commotion was heard indoors and the bear was shot but not before the man had been mauled rather severely about the head and arms.

# PRECIPITATION

Station	Average Yearly Rainfall (Inches)	Average Yearly Snowfall (Inches)
Arctic Bay	2.44	34.7
Cambridge Bay	2.64	29.0
Clyde River	2.27	43.0
Coral Harbour	4.96	41.3
Eureka	0.49	12.5
Isachsen	0.80	21.5
Mould Bay	1.14	15.0
Resolute	2.68	35.5

# TEMPERATURE

Station	Monthly and Annual Average Temperatures												Highest on Record	Lowest on Record	
	J	F	M	A	M	J	J	A	S	O	N	D	Year		
Arctic Bay	-28	-33	-25	-14	12	30	36	36	26	10	-10	-22	2	75	-57
Cambridge Bay	-33	-35	-26	-18	9	30	41	40	28	6	-17	-28	0	76	-63
Clyde River	-23	-26	-22	-10	12	28	33	33	28	15	-2	-18	4	71	-47
Coral Harbour	-33	-31	-22	-9	12	30	38	38	27	12	2	-20	4	79	-58
Eureka	-46	-46	-38	-29	7	33	37	34	14	-13	-27	-41	-10	67	-63
Isachsen	-43	-40	-32	-28	4	26	34	29	10	-11	-26	-35	-9	64	-60
Mould Bay	-41	-29	-29	-20	5	24	33	29	14	-8	-22	-33	-7	57	-63
Resolute	-36	-41	-31	-21	6	29	35	33	19	0	-14	-26	-4	59	-55



The features of life in the far north that are most interesting to those who have never been there are the long winter nights and the midnight sun in summer. This effect is most pronounced at the pole where the sun remains above the horizon for six months of the year and below it for the other six months. At the Resolute weather station which is located near latitude  $75^{\circ}$  N, continuous daylight lasts from the beginning of May until the middle of August, and the sun is below the horizon continuously from the first week in November until the first week in February. In the spring and fall seasons, the sun rises and sets in the more familiar pattern to which we have become accustomed in temperate latitudes. The long winter night is not a continual period of pitch black darkness for there are several hours of twilight near noon. Even on the darkest day of winter at Resolute, there is sufficient twilight outdoors to read the large type in a newspaper.

During the dark season, the moon tries to make up in small measure for the lack of sunlight, for near the time that it is full, the moon does not set for several days. The sky is a bluish purple, the moon a bright orange and the barren landscape has a weird phosphorescent glow that gives it a fascinating unreal sort of beauty. You feel as if you were on another planet altogether.

Winter temperatures on the Arctic Islands are not nearly as low as one would expect. It is only rarely that a temperature as low as 55 or 60 below zero is recorded at any of the stations, which is comparable to the coldest winter temperatures that may be expected in northern Ontario. What makes the winter seem so cold is the fact that temperatures remain consistently low, generally below zero for six months or more of the year, and even 40 below can feel quite uncomfortable if there is any wind at all.

It has been said that there are only two seasons in the Arctic, nine months of winter and three months of poor sledding. This is only a slight exaggeration. Average July temperatures are near  $40^{\circ}\text{F.}$ , and snow usually falls on several days in this warmest month. Low-lying chilly clouds cover the sky during most of June, July and August, with only occasional spells of sunny weather.

These brief interludes with the sun shining out of a clear blue sky, day and night, are the more enjoyable because they occur so seldom. On Sunday, July 5th, in 1948, the temperature at Resolute rose as high as 57°F., and with no wind, it was warm enough for sun bathing. It was fortunate that summer came on a Sunday that year so that the personnel could enjoy it.

It is an amazing fact that no matter how far north you go apparently, any land that is free from ice and snow, if only for a few brief weeks during the year, usually has some sort of vegetation growing on it. The rocky ground on Cornwallis Island makes it one of the most barren of the Arctic Islands, but wherever there is a bit of soil, a large variety of flowers and grasses begins to flourish even before the snow is all gone. At such fertile spots as the ruins of two former Eskimo villages which are found near the Resolute Weather Station, the ground is covered with a carpet of yellow green poppies.

Birds begin to arrive from the south near the end of May even though temperatures are still well below freezing. However, flies and mosquitoes are almost nonexistent on the Arctic Islands. It's a pleasant change not to be bothered by heat waves, flies or mosquitoes for a whole summer.



PLATE 2

Drifts in Winter at an Arctic Weather Station



Occasional snow flurries during July and August serve as a constant reminder that winter is not too far off. In September, winter sets in, in earnest. Snow storms become more frequent, the temperature drops rapidly and the days begin to grow shorter as the dark season approaches. Snow in the Arctic does not resemble the soft fluffy flakes found in temperate latitudes but is more like a fine sand that sifts its way through the tiniest cracks and crevices. It is blown about readily by the wind, and whenever the wind rises above about 15 miles per hour, the snow begins to drift. All the open areas are blown practically bare, but deep hard-packed drifts form around obstructions such as buildings. (SEE PLATE 2). In some of the more severe storms when the wind is over fifty miles per hour, the air is almost solid with flying snow particles and visibility is cut down to about six feet. When you step outdoors, it feels as if you were standing in front of a sand blasting machine.

The men who keep their "weather eye" on the Arctic are enthusiastic about the life there. Air transport permits the provision of modern comforts to take the sting out of the Arctic winter - and the fascination of this relatively new world is a challenge to Canada's young weathermen.

For free list of publications on weather and climate write to:

The Controller,

Meteorological Service of Canada

315 Bloor Street West

Toronto 5, Ontario.

or contact your nearest weather office.