

great land, to me was ample justification for devoting the entire conference to life sciences. The organizers and the University of Alaska are to be congratulated on what obviously was a very successful, enjoyable and, hopefully, scientifically useful meeting.

## MONTHLY TEMPERATURE SUMMARY FOR BRITISH ANTARCTIC SURVEY STATIONS

[Information supplied by David Limbert, British Antarctic Survey, Cambridge.]

Station	Air Temperature (°C)														
	Grytviken (88903)			Signy Island (88925)			Faraday (88952)			Rothera (89062)			Halley (89022)		
	Extreme			Extreme			Extreme			Extreme			Extreme		
Year/Month	Mean <sup>1</sup>	Max	Min	Mean <sup>2</sup>	Max	Min	Mean <sup>1</sup>	Max	Min	Mean <sup>2</sup>	Max	Min	Mean <sup>1</sup>	Max	Min
1981															
May	+0.5	+13.4	-7.8	- 3.8	+ 7.2	-15.5	- 6.2	+9.4	-15.3	- 8.9	+4.8	-21.5	-26.4	-11.3	-43.7
June	-0.7	+16.2	-8.5	- 7.1	+ 6.0	-24.0	- 8.5	+2.5	-20.6	- 9.4	+3.6	-22.6	-25.9	-10.8	-42.3
July	-0.6	+16.6	-8.0	- 9.2	+11.1	-27.5	- 8.9	+3.1	-22.6	- 9.7	+0.1	-23.3	-24.7	-11.5	-42.9
August	+0.4	+12.3	-7.3	-10.9	+3.0	-26.4	-10.8	+2.0	-25.3	-12.8	+3.5	-28.2	-25.1	- 8.6	-40.7
September	+0.8	+10.9	-6.5	- 6.1	+3.7	-24.1	-10.9	+1.5	-27.6	-10.0	+2.1	-29.3	-26.2	-12.1	-45.7

<sup>1</sup> Mean of reports at 00, 03, 06, 09, 12, 15, 18 and 21 hours GMT.

<sup>2</sup> Mean of reports at 00, 06, 12, and 18 hours GMT.

## LETTER TO THE EDITOR

### THE CHALLENGE OF YEAR-ROUND NAVIGATION IN THE CANADIAN NORTH

Madam, the article 'Shipping routes, ice cover and year-round navigation in the Canadian Arctic' by Balaram B. Dey in the September 1981 issue of *Polar Record* (Vol 20, No 129, p 54959) is a useful contribution to the challenge confronting those who would tackle the Northwest Passage using very large icebreaking bulk carriers year-round. As someone with a modicum of practical experience in Arctic marine operations I would presume to offer these comments in the interests of maintaining balance between what seems to be theoretically desirable and what is in fact possible in those waters.

I have recently returned from a novel Arctic operation which saw a Canadian \$50 million processing plant for lead and zinc ores towed from Trois Rivières, Quebec, some 4 800 km north to Little Cornwallis Island, Northwest Territories. Before the event experts and planners were busy assuring us, the operators, how marvellous the communications and how splendid the ice and weather forecasts would be—all the old familiar boasts before the event by those who have yet to learn it is risky to take the Arctic for granted. During the actual tow, communications with shore proved to be difficult and, for a few days, impossible when sunspot activity intervened. The facsimile receiver disgorged a succession of ice and weather maps, too many of which were distorted or illegible. Some shore radio stations either ignored our calls, or were too busy to attend to us or simply could not hear us calling. We encountered heavy ice in locations where intelligence had reported ice-free conditions, providing yet another lesson in what Arctic marine operations are like and not what we should assume will be the case. There is a temptation to think the north can be bludgeoned into compliance with gadgetry at the expense of professionalism.

While I am in general agreement with Dey's article I have to dissent over the proposition that the preferred route from the Beaufort Sea to Parry Channel lies west about Banks Island and through M'Clure Strait, rather than by way of Prince of Wales Strait which is generally acknowledged to be the route for deep draft vessels at this time. No matter how 'ice-capable' the large ships of the future will be, if there is a choice their masters will opt for a route which promises easier ice, or one where more first-year than multi-year ice will be met. The author's major criticism concerning Prince of Wales Strait is that it narrows to 13 km and that ships could on that account be grounded. Except for a 'plug' of multi-year ice at its northern entrance, the ice regime in the strait is predominantly first-year and is fast during the winter. I cannot agree that there is such a risk. Strong north-westerly winds could indeed produce heavy pressure west of Banks Island, and a large icebreaking ship caught there could be held temporarily in an icy vice though she would not necessarily be endangered, more likely inconvenienced. Similar winds blowing in the strait, however, should present no great difficulties.

Any discussion of shipping operations in the Arctic must take into account not only the ice regime to be expected but also the bathymetry. Icebreaking liquefied natural gas (LNG) ships will draw about 15 metres while oil ships will draw more than 21 metres. The Canadian Hydrographic Service is at full stretch trying to meet its commitments. Most of Canada's Arctic waters at this time are surveyed only to 'reconnaissance' standards. A daunting amount of work under the most difficult conditions is required before Arctic waterways can be declared safe for deep draft ships. It may be that some technique to establish 'swept channels' may have to be used as a first step. The soundings on the latest Canadian chart for the waters west of Banks Island and M'Clure Strait are of a reconnaissance nature only, and are based on spot soundings (useful indicators but not what hydrographers need) six miles [9.7 km] apart or random ship tracks. That recurring off-shore lead appears to be associated with shallow water calling for great caution if big ships favoured such a route. The Canadian Hydrographic Service still likes Prince of Wales Strait it seems, as that body of water, already well sounded by Arctic standards, was to have been subjected to additional surveys this year but intervening ice prevented the *Labrador* and her hydrographers from getting there from the east. In effect the danger to big ships will not be the ice so much as the risk to such traffic sailing through inadequately charted waters; it is hoped the Arctic Pilot Projects and the Dome Petroleum of this world have hoisted in this fact and are supporting the Canadian Hydrographic Service in its Arctic endeavours.

It is a satisfaction to note the author's alternative to the Parry Channel/Baffin Bay route, namely Prince Regent Inlet, Fury and Hecla Strait, Foxe Basin and Hudson Strait. This alternative has been overlooked too long because it is routinely pooh-poohed by those who have never personally sampled its potential. The US Coast Guard icebreaker, *Westwind*, first transited Fury and Hecla Strait west to east in 1948. HMCS *Labrador*, in 1957, transited it three times, in both directions, and the soundings on the charts between Foxe Basin and Prince Regent Inlet via this route attest to the diligence of the ship's officers and embarked hydrographers. The bathymetry appears entirely suitable, except for the eastern approaches to the strait in northern Foxe Basin which require additional delineation.

I wish icebreaker masters, and others who have accumulated a great deal of experience in ice navigation, could somehow be persuaded to contribute much more to this absorbing challenge of year-round navigation in our north. Far too many disappear into retirement, taking with them priceless knowledge gained over many years at great cost but, alas, with none of it committed to paper. The learning process, with its attendant mistakes, seems destined to be a recurring and wasteful process. We are entitled, surely, to benefit from this reservoir of talent. Likewise, scientists and academics, before expounding on the topic of ice operations might consider meeting ice navigators on their 'own' ground, thus marrying the talent of the uninformed but literate to the knowledgeable but inarticulate.

Yours faithfully  
T. C. PULLEN

7 September 1981