

Correspondence

Explanation for the reported thinning of sea ice at the North Pole

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In August 2000 it was widely reported in the world press that the drift ice at the North Pole had partly disappeared, leaving large areas of open water that had never before been observed. This pointed to a tremendous acceleration of the global-warming process that has already accounted for a well-documented loss of permanent ice mass in the Arctic Ocean. In at least three sources — *The Independent* (London, 19 August 2000), *Le Monde* (Paris, 22 August 2000), and *Time Magazine* (4 September 2000) — these reports were attributed to James McCarthy, an oceanographer at Harvard University, and palaeontologist Malcolm McKenna of the New York Museum of Natural History. Both had recently returned from a voyage to the North Pole aboard the Russian nuclear-powered icebreaker *Yamal*. This voyage had terminated at Longyearbyen, Spitsbergen, where the group disembarked on 6 August, being immediately replaced by another group of passengers for a subsequent voyage to the North Pole, *Zemlya Frantsa-Iosifa*, and *Novaya Zemlya*, terminating at Murmansk on 19 August 2000. I was a staff member for this second group, and made that second voyage to the North Pole as lecturer on ice navigation and icebreakers, based upon my 40 years of experience navigating in ice, 21 of which were in command of Canadian Coast Guard icebreakers. I had also made one previous voyage to the North Pole aboard the same ship in July–August 1999, leaving from Murmansk and concluding in Longyearbyen, so I was able to compare the different ice conditions prevailing along the same route in two consecutive years.

In 1999 the voyage was much more difficult, and the ice appeared to be much heavier than in 2000. This was because for the entire duration of the 1999 voyage there was a steady northeasterly wind of 15–25 knots, which had packed the ice floes tightly together, exerting moderate pressure from about 84°N all the way to the Pole. There was almost no open water anywhere along the route, there were no leads between floes, and the whole body of ice was moving generally westwards at about 5–6 nautical miles per day. Consequently, the ship had to force almost every inch of the way, being stopped occasionally by some heavy ridging, but she still averaged 8 knots for the voyage, which was better than I had expected.

The easier ice conditions in the year 2000 were related to the fact that there was very little wind at all — 15 knots or less — in the very high latitudes for a period of about one

month while these two voyages were in progress. The little wind that was recorded came from a variety of directions, so that the ice was never put under pressure, was not being forced in any one direction, and had a chance to open up spaces between the floes. From 1999 to 2000 there was neither a difference in floe size, nor any significant decrease in thickness that was observable to the trained eye (without being able to get down on the ice to measure actual thicknesses). However, there were many quite large openings this year between the giant floes measuring several kilometres in diameter. Wherever former pressure ridges had opened up, the brash ice had a chance to disperse, and it was easier for *Yamal* to break the large multi-year floes because there were openings into which the fragments could be pushed. The ship was able to sail around many of the heavier floes, and thus maintain better headway for when she did have to force a way through. Being one of the world's most powerful icebreakers — the Russians have several similar vessels — she makes icebreaking look easy, but any lesser vessel would still have been struggling to make significant progress even in the more favourable conditions of 2000.

Yamal reached the North Pole for the second time that summer on 11 August, about two weeks after attaining the same position on the earlier voyage, and I, too, was able to report much open water at or near to the Pole. However, I was not at all surprised, as the entire ice-field was greatly loosened up by the calm conditions in the region, so it followed naturally that the ice would be loose at the Pole also, the polar pack being constantly in movement, even in wintertime. After all, the North Pole is just a point in the middle of the Arctic Ocean, and the ice drifts across it in the same manner as it does in any open-ocean environment. There were pools between the floes of up to 3 km across, with leads of open water several kilometres in length around some of the larger floes, and almost no brash ice or ice debris in the openings, indicating that there had been no serious pressure events for quite some time. In my estimation there was still 95% or greater ice coverage all the way from the ice edge at approximately latitude 82°N. However, to the untrained eye it probably looked like a lot less, especially as the visibility was down to less than 5 km in fog, rain, and wet snow for most of the northward passage.

To an observer not paying attention to the ship's track over the ground — especially in poor visibility — it might have appeared that the ship was running for many kilometres in open water, which would have been true, except that she was taking a very circuitous route to reach her destination, and the open water was likely a curving lead, rather than a huge pool between floes. Thus an impression could be generated that there was not much ice because the ship was

not forcing ice. However, it is a fact that any icebreaker navigator will always prefer to stay out of ice if at all possible, even if the open-water route may be longer, as there is less effort required and lower potential for damage to the vessel.

All of these factors add up to prove that nothing startlingly new has taken place at the North Pole in the space of one year. It has already been established by scientific observation — such as Operation Sheba, when the Canadian Coast Guard icebreaker *des Groseilliers*

wintered (1997–98) in the ice of the Beaufort and Chukchi seas — that the overall cover and thickness of drift ice in the Arctic Ocean is decreasing. However, the process is gradual, and the openings in the ice at the North Pole in the summer of 2000 are part of a perfectly natural phenomenon that has always occurred at irregular intervals, and may be repeated at any time or may not occur again for many years. As always, this will depend on the interaction between wind and ice — and will have nothing to do with sudden melting.

Shackleton's *Nimrod*...of Riga?

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Readers of *Polar Record* will be aware of the superb exhibition at the National Maritime Museum entitled 'South: the race to the Pole,' which will continue until 30 September 2001. The exhibition is devoted to the main expeditions of the 'Heroic Age': those of Scott, Shackleton, and Amundsen. The Museum has assembled a magnificent collection of exhibits, and these are well-mounted with clear captions. Not the least valuable aspect of the exhibition is a small (and free!) illustrative guide that is concise, well-written, and calculated to stimulate the interest of the non-specialist visitor to read further in the subject and even to pay a personal visit to Antarctica.

There is a minor puzzle in the exhibition. This relates to the ship's bell of *Nimrod*, which is on display and is the property of the Royal Geographical Society (RGS). I was astonished to note that the inscription on the bell reads 'Nimrod...Riga.' The letters on the bell are rather more angular than those that usually appear on the bells of British ships, and they have a somewhat Teutonic appearance. Unaware of a Baltic registration for Shackleton's vessel, which had been, according to Roland Huntford's book (1985: 175), built in Dundee, I raised the matter with Liza Verity of the Museum's Centre for Maritime Research. She very swiftly solved the mystery by consulting the Lloyds' records. The bell on display is not that of the Antarctic *Nimrod*, but is that of a 421-ton, three-masted schooner built in 1890 by the firm of P. Krause of Widrisch (now Vidrizi) in Latvia. Hence the Riga registration. It was owned by a P. Anderson. Latvia

was in the Russian Empire at the time, but most of the trade of the Baltic provinces was in the hands of Baltic German merchants resident in those countries. This may be the reason why the script on the bell is not Cyrillic.

I also approached Dr A. Tatham, keeper at the Royal Geographical Society, and he was kind enough to conduct a speedy search of the Society's records. The bell had been presented to the RGS by a Mrs H.A. Moore, who believed, in the best of faith, that it was that of Shackleton's *Nimrod*. Doubt concerning this identification came from no less an authority than John King Davis, who had served on the 1907–09 expedition. The RGS checked, and published a clarification in 1960 that the newly acquired bell was not that of Shackleton's *Nimrod*. During the course of research, the RGS was able to establish that the *Nimrod* of its bell had been broken up at a south coast port in the 1920s, and that Shackleton's *Nimrod* had been a total wreck off East Anglia during World War I (*Geographical Journal* 1960).

No doubt, and perfectly reasonably, persons seeing the bell in the premises of the RGS associated it with Shackleton's *Nimrod*, and hence the misidentification in the exhibition.

Bells, however, are fairly indestructable and one wonders if there is any chance of Shackleton's bell ever being found!

I am indebted to Liza Verity of the National Maritime Museum and to Dr A. Tatham of the Royal Geographical Society for their contributions towards unravelling this matter. Also to Mr Juris Mors of Riga for the identification of Widrisch.

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