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On the Approaches to Newfoundland and Adjacent Banks, with Remarks re Currents, Ice, and Fog

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contains two further instalments, dealing with lochs in the Forth and Tay basins; the survey of some other lochs has been completed, but the results are not yet in a state for publication.

In September last Sir John Murray left for the purpose of carrying out explorations on Christmas island, in the Indian ocean, and it was arranged that the parts in this number should be put into form and passed for press by Mr. Pullar. Sir John Murray returned to London on the evening of February 16, and on arrival at his hotel was handed a telegram announcing the death of his young friend on the previous day. They had made arrangements to devote most of the coming summer to the sounding of the lochs, with a view to a speedy completion of the entire survey; this important work will necessarily be interrupted by Mr. Pullar's lamented death.

Mr. Pullar was elected a Fellow of the Royal Geographical Society in 1896, and he was also a Fellow of the Royal Scottish Geographical Society. Last month he was admitted to the Fellowship of the Royal Society of Edinburgh.

Mr. Pullar was beloved by all who knew him. He was a man of great bodily and mental activity, lively disposition, generous and brave—knowing no fear. His friends were justified in believing that he would have a great future. His promising career has been cut short by an act of devotion. He sacrificed his life in an heroic endeavour to save the life of another.

"His life was gentle, and the elements
So mix'd in him, that Nature might stand up
And say to all the world, 'This was a man!'"

CORRESPONDENCE.

On the Approaches to Newfoundland and Adjacent Banks, with remarks re Currents, Ice, and Fog.

MUCH has been written about the coasts of Newfoundland and Nova Scotia, and the fogs and currents that prevail there, and many surveys of the outlying banks have been made. Scarcely any of these writings or surveys are of recent date, and are suited more particularly to the more leisurely epoch of the sailing vessel. It may not be out of place to review some of the incidents and facts connected with the passage of a steamer between the British Isles and America *viâ* Cape Race, Newfoundland (the shortest route).

When approaching the rugged and bold coast of Newfoundland in foggy weather, which is too frequent unfortunately, there is nothing to guide the mariner but the soundings, and these are of a character to be of little use, owing to their sameness, except in the vicinity of "Ballard" bank, where the water shoals quickly from 80 fathoms to 9 and 15 fathoms on the bank, and then deepens to about 30 fathoms, which depth is carried close to the shore. Further north, towards Cape Broyle, soundings of 80 fathoms can be found from close proximity to the shore to a distance of 50 miles to eastward, with varying kinds of bottom, which I have seldom found to compare with that marked on the charts. The French surveys of 1839 and 1856 are largely responsible for the soundings and description of bottom shown on our Admiralty Charts, with corrections by British surveys in 1880, 1895 and 1897. Several shoal spots are shown on the "Grand" and Sable banks, the existence of which is doubtful, notably the 5-fathom patch off south coast of Newfoundland in lat. 45° 45' 30" N., long. 54° 19' 30" W., which in itself would constitute a grave source of danger, as many large steamers pass that locality drawing 28 to 30 feet. During many voyages I have

tried to find this 5-fathom patch, when the sea was smooth, and although I have been quite sure of my position on many occasions, I have always found 48 fathoms instead of 5 fathoms, and a sandy bottom instead of mud.

Many times, both in clear weather and fog, when I have been sure of my position (and when I have been uncertain), have I ran "lines of soundings" by Lord Kelvin's machine every 15 minutes for several hours, and I have found them unsatisfactory generally, except that they inform one whether there is sufficient water under the ship or not. In these days of rapid ocean transit, it would be an unspeakable boon to have these banks thoroughly surveyed, with a view to enabling the mariner to at least approximate his position by soundings in this fog-clad region, and thereby expedite his safe arrival in port.

Current of varying strength is the next thing to be considered, and of which there can be less accuracy of report than in soundings. It can, however, be taken on general lines that the arctic current, which carries down such immense bodies of ice yearly, diffuses one part of itself round Cape Race in a south-westerly direction, and continues in this way over the "banks," often close to the shores of New Jersey. A little further south, and often close to the "line of soundings," the influence of the Gulf Stream is felt, but seldom with much strength. The proximity, however, of the hot and cold waters have enabled me to witness on many occasions the curious phenomenon of streaks of vapour rising from the surface of the ocean almost with the regularity of arrangement of furrows in a field, caused no doubt by the intermingling of jets of hot and cold water, or the over-running of a stratum of warm water. This steam or vapour often becomes so dense that it is fog in earnest.

This is one cause of fog I can vouch for, other causes are not so patent. The idea of hot atmospheric waves travelling north and coming in contact with the colder air, thus causing condensation and fog, or the evaporation from the warm water of the Gulf Stream being condensed by the cold winds and causing fog, is not easily grasped by every person when the temperature of sea and air do not vary more than 2° Fahr. Then, again, there are a variety of fogs, some wet and some dry, and varying in density, and, considering the different directions the wind may be blowing from during the existence of these fogs, it renders theories conflicting and hard to understand. Naturally, when the temperature of sea and air is practically similar, the conditions which produce the fog exist elsewhere.

Ice is the next thing to be discussed. This every one knows constitutes a great danger to shipping, both in the northern and southern hemispheres. It is a matter of very general belief that the thermometer will warn you of your approach to ice, and many ancient writers propound this theory. My experience, ranging over sixteen years in the Atlantic trade, experimenting at every opportunity, teaches me that in the case of being to leeward of a vast field of ice, the temperature of sea-surface, and air especially, may be found colder to a distance of a mile or two; but in the case of bergs, no perceptible difference will be noticed until too close to avoid collision if the vessel be moving even slowly through the water. Many times I have taken temperatures of sea and air as soon as I sighted an iceberg, and did so every ten minutes until within a quarter of a mile of it, and I found no change whatever. Another time I sighted icebergs a long way off, and noted temperatures, and in the course of four or five hours I had passed forty-five of them, varying from 1 to 7 miles distant, and the temperature did not at any time indicate their presence. Ice-blink *will* sometimes reveal the vicinity of these dread enemies of shipping, but nothing else that I am aware of while fog prevails.

H. MAGILL,

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Captain ss. *Lord Devonshire*.