

their approximate causes are influenced by temperature—the Gulf Stream being increased in mass and velocity when the temperature is highest, and the Labrador Stream when it is lowest; and in conformity, we find it a general impression that the former is broader and more rapid in the summer of our climate than in winter. I must however state, that I have been unable from my own personal observation, either by the thermometer or the set of the vessel, to distinguish this increase of the Gulf Stream in summer. Thus in my passage to England, in August, 1836, from the time we passed to the eastward of George's Bank, in a latitude about a degree to the south of it, we experienced a low temperature in the water, and the vessel was retarded. We were therefore in the Labrador Current.

After the squadron had crossed the Gulf Stream, we experienced little action from current until we reached Madeira, the whole difference between our dead reckoning and the true place of the ship being no more than one hundred and seventy-five miles in twenty-six days.

Before leaving this part of our subject, it may be as well to refer to facts familiarly known, but which did not come within the scope of our observations. The stream known on our coast by the epithet of Gulf, may often be traced upon the surface, but with diminished velocity, entirely across the Atlantic, throwing at some seasons the seeds and drift of tropical climates upon the British Islands, even as far north as the Shetlands. At other times, when the Gulf Stream ceases to flow, or is overpowered by the great Polar Current, they are carried by the latter to the southeastward, on the coast of Spain and Portugal, which current has been so disastrous by the number of vessels that have been wrecked on Cape Finisterre; where it divides, one branch of it passing around the shores of the Bay of Biscay, along the west coast of France, and thence crossing the English Channel, which is now well known as the Rennell Current; while the main Polar Stream flows southward, along the coast of Portugal towards Madeira, with a diminished velocity, as a surface current.

That the stream which sets upon Cape Finisterre is the origin of the Rennell Current, the following remarks by Horsburgh clearly show.

“The current is found to set eastward, from March to November, particularly when westerly winds prevail; and off Cape Finisterre, and near the south part of the Bay of Biscay, it sets mostly along the coast to the eastward; and along the east coast of the bay, it sets to the northward, parallel to the west coast of France.”

At Madeira and the Canary Islands the surface Polar Stream appears to have ceased; but by our observations on the deep-sea tempe-