portion which crosses the Atlantic from the African side strikes against the mass of South America, and divides, one portion turning toward the south and skirting the shores of Brazil; the other bending northwestward into the Gulf of Mexico, and issuing thence as the well-known Gulf Stream. This equatorial water is comparatively warm and light. At the same time, the heavier and colder polar water moves toward the equator, sometimes in surface-currents like those which skirt the eastern and western shores of Greenland, but more generally as a cold undercurrent which creeps over the floor of the ocean even as far as the equator.

A large body of information has now been gathered as to the great marine currents which traverse the upper parts of the ocean, but comparatively little is yet known of the velocity of the movement of the water at great depths. Where the bottom is covered with a deep fine ooze we may infer that the rate of movement must be so feeble as not to disturb the deposition of the finest sediment. Where, on the other hand, "hard-bottom" is found, we may probably conclude that a sufficiently strong current flows there to prevent the accumulation of sediment, for all over the ocean there is enough of organic and inorganic particles diffused through the water to form a deposit on the floor if the conditions are favorable. A few observations have been made showing that at considerable depths among submarine ridges or islands strong currents exist. At a depth of 3000 feet near Gibraltar the telegraph cable from Falmouth was ground like the edge of a razor, and the scouring effects of strong currents have been noted at depths of 6000 feet between the Canary Islands.[252]

Much discussion has arisen in recent years as to the

[252] T. M. Reade, Phil. Mag. xxv. 1888, p. 342.