

the northern extension of the gulf stream, the whole column of water from the surface to the bottom is reduced to the lowest temperature which it will bear without freezing, and is thus an ample source of the coldest water of the highest specific gravity.

The proof that the flow of the cold indraught is almost secular in its slowness, is that over a large portion of the ocean where the low bottom temperature is known to prevail, the sea-bed is covered with a light fleecy deposit of microscopic organisms of great delicacy, into which the sounding-lead has in some instances sunk several feet, and which must inevitably be drifted away by a current of appreciable velocity. In all places where any perceptible current exists, the bottom consists of sand or mud or gravel and rolled pebbles. In some cases also, sounding in the deep water of the mid-Atlantic, the line, after running out greatly in excess of the depth, has been found to have coiled itself in a tangled mass right over the lead—a proof of almost absolute stillness.

In some places, owing to the conformation of the neighbouring land or of the sea-bottom, warm and cold currents are circumscribed and localized, and this sometimes gives us the singular phenomenon of a patch or stripe of warm and a patch of cold sea meeting in an invisible but very definite line. There is a curious instance of this in the 'cold wall' which defines the western border of the gulf stream along the coast of Massachusetts, and another scarcely less marked which we discovered during the trial cruise of the 'Lightning' has been fully described by Dr. Carpenter in his report of that cruise, and will be referred to hereafter.