

depressions in the surface isotherms, the balance of probability seems to be in favour of the view that the conditions of temperature and the slow movement of this vast mass of moderately cold water, nearly two statute miles in depth, are to be referred to an Antarctic rather than to an Arctic origin.

The North Atlantic Ocean seems to consist first of a great sheet of warm water, the general northerly reflux of the equatorial current. Of this the greater part passes through the Strait of Florida, and its north-easterly flow is aided and maintained by the anti-trades, the whole being generally called the Gulf-stream. This layer is of varying depths, apparently from the observations of Captain Chimmo and others, thinning to a hundred fathoms or so in the mid-Atlantic, but attaining a depth of 700 to 800 fathoms off the west coasts of Ireland and Spain. Secondly of a 'stratum of intermixture' which extends to about 200 fathoms in the Bay of Biscay, through which the temperature falls rather rapidly; and thirdly, of an underlying mass of cold water, in the Bay of Biscay 1,500 fathoms deep, derived as an indraught falling in by gravitation from the deepest available source, whether Arctic or Antarctic. It seems at first sight a startling suggestion, that the cold water filling deep ocean valleys in the northern hemisphere may be partly derived from the southern; but this difficulty, I believe, arises from the idea that there is a kind of diaphragm at the equator between the northern and southern ocean basins, one of the many misconceptions which follow in the train of a notion of a convective circulation in the sea similar to that in the atmosphere. There is