

“So, after all, there is an under-current setting outwards in the Straits of Gibraltar.

“Repeating my thanks for this interesting memoir, believe me, dear Sir,

“Yours very truly,

“J. F. W. HERSCHEL.

“*Dr. W. B. Carpenter.*”<sup>1</sup>

The second view, supported by Dr. Petermann of Gotha, and by most of the leading authorities in physical geography in Germany and Northern Europe, and strongly urged by the late Sir John Herschel in his ‘*Outlines of Physical Geography*’ published in the year 1846, attributes nearly the whole of the sensible phenomena of heat-distribution in the North Atlantic to the Gulf-stream, and to the arctic return-currents which are induced by the removal of tropical water towards the polar regions by the Gulf-stream. If we for a moment admit that to the Gulf-stream is due almost exclusively the singular advantage in climate which the eastern borders of the North Atlantic possess over the western, the origin of this great current, its extent and direction, and the nature and amount of its influence, become questions of surpassing interest. Before considering these, however, it will be well to define what is here meant by the term ‘*Gulf-stream,*’ for even on this point there has been a good deal of misconception.

I mean by the Gulf-stream that mass of heated water which pours from the Strait of Florida across the North Atlantic, and likewise a wider but less definite warm current, evidently forming part of the same great movement of water, which curves north-

<sup>1</sup> *Nature*, vol. iv. p. 71.