

produce any current whatever;¹ but in this view he does not certainly receive universal support. I am myself inclined to believe that in a great body of salt water at different temperatures, with unequal amounts of evaporation, under varying barometric pressures, and subject to the drift of variable winds, currents of all kinds, great and small, variable and more or less permanent, must be set up;² but the probable result appears to be reduced to a minimum when we find that causes, themselves of doubtful efficiency, actually antagonize one another; and that we are obliged to trust for the final effect to the amount by which the least feeble of these exceeds the others in strength. Speaking in the total absence of all reliable data, it is my general impression that, if we were to set aside all other agencies, and to trust for an oceanic circulation to those conditions only which are relied upon by Dr. Carpenter, if there were any general circulation at all, which seems very problematical, the odds are rather in favour of a warm under-current travelling northwards by virtue of its excess of salt, balanced by a surface return-current of fresher though colder arctic water.

With regard, then, to this question of a general circulation caused by difference in specific gravity, for the present I cordially endorse the opinion expressed by the late Sir John Herschel in a cautious

¹ James Croll, *op. cit.*

² On the Distribution of Temperatures in the North Atlantic. An Address delivered to the Meteorological Society of Scotland at the General Meeting of the Society July 5th, 1871, by Professor Wyville Thomson.