

a column of mercury about thirty inches in height. We have also stated that the mean temperature of the atmosphere near the equator, and at the level of the sea, is upwards of  $80^{\circ}$ ; while in the Polar regions, it is constantly below  $32^{\circ}$ , the freezing point of water. Hence, as air expands by heat, and becomes specifically lighter; it is obvious that a given bulk of air at the level of the sea round the poles, must be considerably heavier, than a similar bulk of air at the level of the sea under the equator. The air, therefore, round the poles being colder and heavier, will have a tendency to flow along the earth's surface from the poles towards the equator, and to displace the lighter air under the equator; while the equatorial air so displaced, will, owing to its lightness, ascend and flow back again over the colder air, north and south toward the poles, so as to preserve the equilibrium. Moreover these currents will be perpetual; for the heat of the equator and the cold of the poles being constant, the same tendency to change will always exist, and thus the currents will be constant likewise.

These atmospheric currents constitute one primary element of the winds; and are the grand means by which the equalization of temperature over the globe is effected. If the earth were at rest, and free from irregularity, the currents or winds near its surface would, of course, be in the northern hemisphere, always