

the south, in the southern hemisphere; till left alone by themselves, the polar currents proceed onward to the equator, as if the motion of the earth had no existence.*

To these great atmospheric currents may be traced the fluctuations of the barometer, and all the innumerable modifications peculiar to different localities of sea and land, of mountain and plain. For, as Mr. Daniell justly observes, in the nicely balanced state of the forces producing these currents, slight irregularities of temperature are capable of causing great disturbances; and expansions and contractions acting unequally upon the antagonist currents, operate by deranging the adjustment of their several velocities. Hence accumulations in some parts, and corresponding deficiencies in others, necessarily arise; and occasion fluctuations in the barometer, far surpassing what would be occasioned by the whole vapour, supposing it were at once

* In the first edition of this volume, we ascribed the above theory of the trade winds to Mr. Daniell. We have since learnt, however, that the same theory was advanced a century ago, by Mr. Hadley. (*Philos. Trans.* xxxix. p. 58.) Without being aware of the existence of Mr. Hadley's essay, Dr. Dalton offered a similar explanation of the trade winds in his *Meteorological Observations and Essays*. Still more lately, the same theory was advanced by Mr. Daniell, and illustrated by Captain Basil Hall, in an essay appended to the second edition of Mr. Daniell's *Meteorological Essays*; to which we refer the reader for details.