

of winds. There can be no doubt that the two luminaries, by their attractive force, have an influence upon the atmosphere somewhat similar to that which disturbs the ocean, but their effect upon it is of little or no importance in our present inquiry, and it is quite certain that the tradewinds, so far from being produced by, exist in spite of their attraction.

The tradewinds in some parts are subject to a change of direction every six months, and they are then called monsoons. This variation in the tradewinds is produced by the annual revolution of the earth round the sun, which causes the north pole to be directed towards that luminary one half of the year, and the south pole the other half; one being the summer of the northern hemisphere, the other the summer of the southern. When the northern hemisphere is especially exposed to the sun's rays, Arabia, Persia, India, and China, being greatly heated, raise the temperature of the atmosphere that covers them, and the colder air from the regions south of the equator rushes towards the parts. It will therefore follow that for one six months the tradewind is in this instance produced by a current of air rushing from the equatorial regions; but, when the summer of the southern hemisphere approaches, then the direction of the current changes, and the colder air rushes towards the ocean and countries near the southern tropic, which are then the most heated.

It is not always easy to determine with precision the causes which disturb the equilibrium of the aerial ocean. There are so many active agents exerting their influence, and in such an infinity of ways, that it is equally difficult to separate or to combine their effects. But although some objections may be made to the explanations we have given, yet there can be no doubt that the causes which have been supposed to operate in disturbing the equilibrium of the atmosphere are the most important, however their results may be obstructed by not less active though minor local agencies.

From the parallel of  $30^{\circ}$  to the pole in both hemispheres, the winds are irregular both in direction and violence. But in all countries there is a tendency to periodical winds more or less marked. Even in the Island of Great Britain, which, from its situation, having a continent on one side and an ocean on the other, must necessarily have a variable climate, there is a certain prevalence of periodical winds; easterly