

to the anomalous periodic changes that are known to occur, placing all calculations at nought.

The trades, the monsoons, and other steady or periodic winds, as well as the variable winds of the temperate zones, are either caused or much influenced by the manner in which temperature is distributed over the surface of the ocean, by the polar and equatorial streams. It is therefore proper that, as immediately connected with this subject, we should mention the spaces which lie between the zones of the trade and westerly winds, and which are usually the seat of light variable winds and calms. The existence of such a zone in the North Atlantic has long been known, and we have assured ourselves of the existence of similar zones in the other oceans, though not to so great an extent. They lie on each side of the parallels of  $30^{\circ}$  in both hemispheres, and are about three hundred miles in breadth. Leaving out of account the effect of the great currents of the atmosphere, we find this space to be a sort of eddy, in which the polar and equatorial flow of waters neutralize each other, and where therefore, all the floating matter that is brought by both must accumulate. I shall have occasion to refer to this view of these zones hereafter, as connected with the subject of whaling.

If, however, the view I have taken of the flow of the waters of the ocean and their results be correct, which the facts we observed and those I have quoted from the authority of others, scarcely leave a doubt of, we may see the admirable provisions of nature by which the Creator has regulated the fluid mass of the ocean, in its endless gyrations seeking to attain a state of equilibrium which it never reaches, at the same time and by the same course distributing the excess of the tropical heats throughout the whole surface of the globe, and bringing towards the equator the icy masses which would otherwise accumulate in the frozen zones.

But, putting aside the partial observations that have been detailed in the preceding pages, relative to the direction and extent of the great streams and currents of the ocean, whether surface or submarine, the habits of the spermaceti whale alone would furnish strong circumstantial evidence that such currents do exist, and that they are variable in their strength, and even in direction, according to the season.

It is well known to whalers that the favourite and appropriate food of the sperm whale is a gelatinous medusa; which, however, has not as yet received from naturalists much attention. It may, however, be advanced as certain that this molluscous animal most abounds in the higher latitudes of both hemispheres, which would therefore seem to be the places in which it is produced, and to which its habits are best