

gravity is lower than in the south, the contrary being the case in the Atlantic, and no doubt the configuration of these two oceans is the chief cause of their diverging conditions, the North Pacific being, as already stated, a wide open bay, whereas the North Atlantic is more like a lake.

Generally speaking, the density diminishes from the surface down to a depth of 800 or 1000 fathoms, and then increases towards the bottom, where, in the Pacific, the density varies from 1.0254 to 1.0257. In the South Atlantic the bottom density is 1.0258 to 1.0260, and increases to as much as 1.0265 in the North Atlantic. Here, however, is found the greatest collection of dense water to be found in any open ocean, and the basin of the eastern portion of the North Atlantic receives the overflow of very dense water from the Mediterranean, which finds its way out along the bottom of the Strait of Gibraltar. This water having a high temperature (55° F.) and high density (1.028 to 1.029) affects the temperature as well as the density of the bottom water.

In the trade wind regions, the density decreases from a maximum at the surface to a minimum about 1000 fathoms, and then slowly increases again. In the regions of the equatorial calms and rains the specific gravity most commonly increases from a minimum at the surface to a maximum at a depth of from 50 to 150 fathoms, from which point, downwards, it follows the same law as in the trade winds. The existence of the subsurface maximum is probably due to the fact that the water, concentrated on both sides of the Equator, is driven by the wind towards the Equator, where there is a constant supply of fresh water of high temperature, beneath which it is forced to dip. Starting from the source of the trade wind, it is found that while it is concentrating the surface water it is always forcing it farther into warmer latitudes, where, owing to the rise of temperature, the water, though it has become saltier, has at the same time become lighter. As the Equator, however, is approached, the rise of temperature with decreasing latitude diminishes, and the water thus becomes liable to sink of itself, even although it were not covered over by the tropical rains. A large quantity of water forced northwards towards the Equator passes into the North Atlantic, owing to the preponderating force of the southeast trade. Here it follows the course of the Equatorial Current into the Caribbean Sea, reappearing as the Gulf Stream, and ultimately forming part of the great lake of warm and dense water which occupies the basin of the North Atlantic. The only outlet for this water is into polar regions, and a portion of the water is driven in this direction and keeps the sea free from ice far into Arctic latitudes. The bulk of it, however, remains in the lake-like basin of the ocean, the central portion of which is known as the Sargasso Sea. In the centre of the northeast trade wind, the evaporation which goes on is very great, whilst at the same time a not insignificant yearly oscillation of temperature takes place; these two causes combined materially assist the propagation downwards both of heat and saltness, and in point of fact in both these respects the waters of this region exceed those of any other part of the ocean. This