temperature and salinity in this remarkable basin, which has been so thoroughly studied by the Norwegians in their yearly expeditions, affords the strongest proof of the efficacy of high surface salinity, and a considerable difference of winter and summer temperature in cooling the deeper waters of the sea.

The portion of the Equatorial Current which is diverted southwards on striking the Brazilian coast carries warm and concentrated water far to the southward, and similarly from the Indian Ocean the Agulhas Current brings warm and dense water into the colder regions of the Southern Ocean. The observations made in the South Atlantic on the 28th February 1876, in lat. 35° 39′ S., long. 50° 47′ W., depth 1900 fathoms, show the existence of the dense water from tropical regions penetrating to a great depth. The density (at 60° F.) of the bottom water was found to be 1·02650, and the trustworthiness of this observation is confirmed by the fact that the "Gazelle," in a sounding close to the spot (lat. 34° 36′ N., long. 49° 46′ W.), found the density of the bottom water to be 1·02654 in 1875 fathoms. In a sounding in 1900 fathoms, just off the Agulhas Bank, the bottom water had a specific gravity of 1·02607, which could only have come from the Indian Ocean. The surface water of this ocean is not remarkable for saltness; indeed, in the equatorial part it is very much below the average of Pacific equatorial water. There is, however, one region in the northern part of this ocean, in which concentration goes on with very great vigour, namely, in the Red Sea; and just as the evaporation of the water in the Mediterranean affects the specific gravity of the deep water of the North Atlantic, so may the Red Sea furnish concentrated water to the depths of the Indian Ocean. An objection might be raised to this source of the heavy water observed by the "Gazelle" between Mauritius and Australia, from the fact that the temperature of the bottom water was not above the normal, whereas water coming from the Red Sea must enter the Indian Ocean with a temperature of 70°. Taking the density of the bottom water of the Antarctic Ocean to be 1·0255, and that of the deep water of the Red Sea to be 1·0300, it will be seen that to produce water of the density 1·0261 it is necessary to mix six volumes of Red Sea water with thirty-nine volumes of Antarctic water. If the temperature of the Red Sea water be 70° F., and that of the Antarctic water 33°·5, the temperature of the mixture would be 38°·3. The bottom temperature in the Agulhas Current as determined on December 18th, 1874, was 36°·4. It is therefore probable that the overflow from the Red Sea has a considerable influence on the temperature and density of the deep water of the western Indian Ocean. The effect of concentration in raising the temperature in the subsurface water of this ocean is very evident; in lat. 24° 41′ S. the mean temperature of the water down to 1500 fathoms was 46°·4 F.

To compensate for the warm water flowing from tropical to polar regions, there are cold currents flowing in the reverse direction. One of the most remarkable is that which comes down Baffin Bay, and hugging the American coast penetrates as far south as the latitude of Washington before it is absorbed into the body of the ocean, to the cold of the