

The equatorial minima observed in the Challenger were 1·0259 in 3° N. on the outward, and 1·0258 on the homeward voyage; by Lenz 1·0251 in 7° 30' N. outward, and 1·02575 in 2° N. homeward-bound. On the outward voyage he appears to have crossed two streams or layers of remarkably fresh water, separated by a narrow stratum of water of the ordinary specific gravity of 1·0261. It is worthy of remark, that wherever the Counter Equatorial Currents, including the Guinea Current among them, are entered, fresher water is found than outside of them. On the outward voyage the Challenger sailed along the Equator from the meridian of 14° W. to that of 30° W. in the course of the south Equatorial Current; the density was found to rise from 1·0259 in the east to 1·0267 in the west, where the dense water of the southeast trade wind region was crossed as it entered the North Atlantic.

In the South Atlantic, as in the North, the maximum is in the heart of the trade wind region, but it is situated considerably nearer the Equator than is the case in the North. It is also lower on the east side than it is on the west, the absolute maximum on the west side being 1·02775 off the Abrolhos Islands. The very high specific gravity which was observed on the Brazilian coast from Cape St. Roque to the Abrolhos Islands is very remarkable, considering the size of the rivers which empty themselves into the ocean in the neighbourhood. It is no doubt explained by the potency of the southeast trade driving the water concentrated by its action constantly against the American coast, part of the stream going into the North Atlantic as the Equatorial Current, and part running along the Brazilian coast as the Brazilian Current, carrying its saltness even beyond the mouth of the River Plate.

Immediately to the south of the Cape of Good Hope there is much variation in the density as well as in the temperature of the surface water. On the Atlantic side both temperature and density are as a rule lower than on the eastern side, where the Agulhas Current brings the warm and dense waters of the tropical parts of the Indian Ocean. In this current the density of the surface water was as high as 1·0266, and in proceeding to the southward it fell rapidly to 1·0260 in 40° S. lat., and 1·0250 in 46° S. From this latitude to the edge of the pack ice this density is maintained with great uniformity (see p. 422).

Icebergs were not found to affect the density of the water much, principally because the temperature of the water was always close to 32° F., and possessed therefore very little melting power. Amongst pack ice, however, the melting point of which is considerably lower than that of freshwater ice, the sea was, as might have been expected, colder and fresher. In fact, seawater ice is a perfect preservative, and possibly, also, to some extent a restorative, of freshwater ice. Hence icebergs, as long as they remain in Antarctic regions, that is, amongst saltwater ice, have little or no tendency to decrease in size; what is melted by the direct rays of the sun being probably much more than made up by the snow falling on the top. It is true that the temperature observations