

water of the Gulf-stream, forced to the eastward by its high initial velocity, and thus accumulated at the head of the Atlantic, whence it has no free egress, becomes "banked down," and the warm stratum abnormally thickened against the coast of Western Europe. Some ingenious theories, depending upon changes of density produced by evaporation, and changes of density combined with changes of temperature, have been proposed to account for the great accumulation of water of abnormally high specific gravity, and at an abnormally high temperature in the North Atlantic; but these do not seem to be satisfactory, and as they can only be supposed to act, at most, as very subordinate auxiliaries to the wind circulation, they sink in importance into the category of questions of detail.

The branch of the equatorial current deflected to the southward of Cape St. Roque passes down as the Brazil Current, parallel with the coast of South America. In its southward extension it finds no barrier corresponding to that which circumscribes and moulds the northern branch. Gradually widening out and becoming less defined, at the same time acquiring a sufficient easterly deflection to keep it out from the coast, it is at length almost merged in the great easterly drift-current which sweeps round the world, occupying a belt 600 to 1000 miles broad in the Southern Sea. But while the greater part of the Brazil Current is thus merged, it is not entirely lost; for at its point of junction with the drift-current of the westerlies all the upper isobathytherms are slightly deflected to the south, and opposite the point where this deflection occurs there is comparatively open sea far to the southward, and a penetrable notch in the southern pack. Taking advantage of this, Weddell, in 1829, and Ross, in 1843, reached the parallels of $14^{\circ} 14'$ and $71^{\circ} 30'$ S. respectively, between the meridians of 15° and 30° W. The same thing occurs with regard to the Agulhas Current and the East Australian Current; but the case of the Brazilian Current is a little more complicated than that of the