is accordingly of the utmost importance, not merely because of the light it throws on the question of ocean circulation, but also because of its value to navigation. As early as 1871 Nares and Carpenter made a study of these currents, and important investigations have been made in later days by the Danish research vessel "Thor" under the direction of Joh. Schmidt. No direct measurements of the actual velocities of the currents at different depths and their direction had previously been undertaken, but current-meters, especially the excellent one constructed by V. W. Ekman, put it in our power to make the attempt.

The "Michael Sars" had previously measured currents off the coast of Norway by anchoring a life-boat fore and aft with grapnels and a stout hemp line. We endeavoured to work on the same principle in the Strait of Gibraltar (Station 18), but were unsuccessful at first; one line after the other parted, owing to the velocity of the current. Finally we had to anchor the ship itself with 1½-inch steel line and a warp anchor, in 400 metres of water on a hard bottom. This held, and she lay at anchor from 1.30 A.M. till 5 P.M. on the 30th April. During this time Helland-Hansen worked unceasingly. One current-meter was used continuously at a depth of 10 metres, and another was lowered to different depths right down to the bottom. In addition he took a series of water-samples and temperatures at different depths.

He found that there were two strong currents in the Strait, one going east from the Atlantic into the Mediterranean in the upper layers, and one going west at the greater depths. The limit between them was for the most part at a depth of about 150 metres, but it varied so much that in the afternoon between 2 and 2.30 P.M. it was at a depth of 50 metres, while between 4 and 5 A.M. even at the very surface the current went westwards. These variations practically coincided with the tidal movements.

There were high velocities in the upper east-going current; at 10 metres the velocity varied between 1 and 2½ knots, and at 25–30 metres between 1.7 and 3 knots. At a depth of 100–120 metres the current was always westerly, but the velocity was only between half a knot and a knot, whereas at 150–200 metres, where the current was also westerly, the velocity varied from 0.3 knot to as much as 5 knots; close to the bottom a velocity of ¼ knot was measured. Helland-Hansen's interesting observations are the first reliable figures regarding the movements at the different depths, and they are