culation exists in the ocean; that warm currents move round the equatorial regions, and are turned now to the one side, now to the other, by the form of the continents along and around which they sweep; that cold currents set in from poles to equator; and that, apart from actual currents, there is an extremely slow "creep" of the polar water, under the warmer upper layers, to the equator.

(3) *Waves and Ground-Swell.*—A gentle breeze curls into ripples the surface of water over which it blows. A strong gale or furious storm raises the surface into waves. The agitation of the water in a storm is prolonged to a great distance beyond the area of the original disturbance, and then takes the form of the long heaving undulation termed *Ground-swell.* Waves which break upon the land or sunken rocks are called *Breakers*, and the same name is applied to the ground-swell as it bursts into foam and spray upon submarine reefs and shoals. The concussion of earthquakes sometimes gives rise to very disastrous ocean-waves (pp. 461, 472).

The height and force of waves depend upon the strength and continuance of the wind, the breadth and depth of sea, and the form and direction of the coast-line. The longer the "fetch," and the deeper the water, the higher the waves. A coast directly facing the prevalent wind will have larger waves than a neighboring shore which presents itself at an angle to the wind or bends round so as to form a lee-shore. The highest waves in the narrow British seas probably never exceed 15 or 20 feet, and usually fall short of that amount. The greatest height observed by Scoresby among the Atlantic waves was 43 feet.[954]

[954] Brit. Assoc. Rep. 1850, p. 26. A table of the observed heights of waves round Great Britain is given in Mr. T. Stevenson's treatise on "Harbors," p. 20.