

tween the tropics (termed the equatorial or rotation current) is considered to be owing to the propagation of tides and to the trade winds. Its direction is changed by the resistance it experiences from the prominent eastern shores of continents. The results recently obtained by Daussy regarding the velocity of this current, estimated from observations made on the distances traversed by bottles that had purposely been thrown into the sea, agree within one eighteenth with the velocity of motion (10 French nautical miles, 952 toises each, in 24 hours) which I had found from a comparison with earlier experiments.* Christopher Columbus, during his third voyage, when he was seeking to enter the tropics in the meridian of Teneriffe, wrote in his journal as follows:† “I regard it as proved that the waters of the sea move from east to west, as do the heavens (*las aguas van con los cielos*), that is to say, like the apparent motion of the sun, moon, and stars.”

The narrow currents, or true oceanic rivers which traverse the sea, bring warm water into higher and cold water into lower latitudes. To the first class belongs the celebrated Gulf Stream,‡ which was known to Anghiera,§ and more especially to Sir Humphrey Gilbert in the sixteenth century. Its first impulse and origin is to be sought to the south of the Cape of Good Hope; after a long circuit it pours itself from the Caribbean Sea and the Mexican Gulf through the Straits of the Bahamas, and, following a course from south-southwest to north-northeast, continues to recede from the shores of the United States, until, further deflected to the eastward by the Banks of Newfoundland, it approaches the European coasts, frequently throwing a quantity of tropical seeds (*Mimosa scandens*, *Guilandina bonduc*, *Dolichos urens*) on the shores of Ireland, the Hebrides, and Norway. The northeastern prolongation tends to mitigate the cold of the ocean, and to ameliorate the climate on the most northern extremity of Scandinavia. At the point where the Gulf Stream

* Humboldt, *Relat. Hist.*, t. i., p. 64; *Nouvelles Annales des Voyages*, 1839, p. 255.

† Humboldt, *Examen Crit. de l'Hist. de la Géogr.*, t. iii., p. 100. Columbus adds shortly after (Navarrete, *Coleccion de los Viages y Descubrimientos de los Espanoles*, t. i., p. 260), that the movement is strongest in the Caribbean Sea. In fact, Rennell terms this region, “not a current, but a sea in motion” (*Investigation of Currents*, p. 23).

‡ Humboldt, *Examen Critique*, t. ii., p. 250; *Relat. Hist.*, t. i., p. 66-74.

§ Petrus Martyr de Anghiera, *De Rebus Oceanicis et Orbe Novo*, Bas., 1523, Dec. iii., lib. vi., p. 57. See Humboldt, *Examen Critique*, t. ii., p. 254-257, and t. iii., p. 108.