

parent above, while the lower portion holds fine sediment in suspension (a fact ascertained by soundings), when suddenly it impinges upon a bank, and its height is reduced to 300 feet. It is thus made to boil up and flow off at the surface, a process which forces up the lower strata of water charged with fine particles of mud, which in their passage from the coast had gradually sunk to a depth of 300 feet or more.\*

One important character in the formations produced by currents is, the immense extent over which they may be the means of diffusing homogeneous mixtures, for these are often co-extensive with a great line of coast; and, by comparison with their deposits, the deltas of rivers must shrink into insignificance. In the Mediterranean, the same current which is rapidly destroying many parts of the African coast, between the Straits of Gibraltar and the Nile, checks also the growth of the delta of the Nile, and drifts the sediment of that great river to the eastward. To this source may be attributed the rapid accretions of land on parts of the Syrian shores where rivers do not enter.

Among the greatest deposits now in progress, and of which the distribution is chiefly determined by currents, we may class those between the mouths of the Amazon and the southern coast of North America. Captain Sabine found that the equatorial current before mentioned (p. 279.), was running with the rapidity of four miles an hour where it crosses the stream of the Amazon, which river preserves part of its original impulse, and has its waters not wholly mingled with those of the ocean at the distance of three hundred miles from its mouth.† The sediment of the Amazon is thus constantly carried to the northwest as far as to the mouths of the Orinoco, and an immense tract of swamp is formed along the coast of Guiana, with a long range of muddy shoals bordering the marshes, and becoming converted into land.‡ The sediment of the Orinoco is partly detained, and settles near its mouth, causing the shores of Trinidad to extend rapidly, and is partly swept away into the Carribean Sea by the Guinea current. According to Humboldt, much sediment is carried again out of the Carribean Sea into the Gulf of Mexico.

It should not be overlooked that marine currents, even on coasts where there are no large rivers, may still be the agents of spreading not only sand and pebbles, but the finest mud, far and wide over the bottom of the ocean. For several thousand miles along the western coast of South America, comprising the larger parts of Peru and Chili, there is a perpetual rolling of shingle along the shore, parts of which, as Mr. Darwin has shown, are incessantly reduced to the finest mud by the waves, and swept into the depths of the Pacific by the tides and currents.

In regard to the distribution of sediment by currents, it may be observed, that the rate of subsidence of the finer mud carried down

\* Robt. A. C. Austen, Quart. Journ. Geol. Soc. vol. vi. p. 76.

† Experiments to determine the Figure of the Earth, &c. p. 445.

‡ Lochead's Observations on the Nat. Hist. of Guiana. — Edin. Trans. vol. iv.