fine and coarse siliceous sand, mixed with comminuted corals and shells.*

It has been supposed by some writers that these vast submarine hills are made up bodily of drift sand, and other loose materials principally supplied from the waste of the English, Dutch, and other coasts. But the late survey of the North Sea, conducted by Captain Hewett, affords ground for suspecting that this opinion is very erroneous. If such immense mounds of sand and mud had been accumulated under the influence of currents, the same causes ought nearly to have reduced to one level the entire bottom of the German Ocean; instead of which some long narrow ravines are found to intersect the banks. One of these varies from seventeen to forty-four fathoms in depth, and has very precipitous sides; in one part, called the "Inner Silver Pits," it is fifty-five fathoms deep. The shallowest parts of the Dogger Bank were found to be forty-two feet under water, except in one place, where the wreck of a ship had caused a shoal. Such uniformity in the minimum depth of water seems to imply that the currents, which vary in their velocity from a mile to two miles and a half per hour, have power to prevent the accumulation of drift matter in places of less depth.

Strata deposited by currents. — It appears extraordinary, that in some tracts of the sea, adjoining the coast of England, where we know that currents are not only sweeping along rocky masses, thrown down, from time to time, from the high cliffs, but also occasionally scooping out channels in the regular strata, there should exist fragile shells and tender zoophytes in abundance, which live uninjured by these violent movements. The ocean, however, is in this respect a counterpart of the land; and as, on the continents, rivers may undermine their banks, uproot trees, and roll along sand and gravel, while their waters are inhabited by testacea and fish, and their alluvial plains are adorned with rich vegetation and forests, so the sea may be traversed by rapid currents, and its bed may here and there suffer great local derangement, without any interruption of the general order and tranquillity. It has been ascertained by soundings in all parts of the world, that where new deposits are taking place in the sea, coarse sand and small pebbles commonly occur near the shore, while farther from land, and in deeper water, finer sand and broken shells are spread out over the bottom. Still farther out, the finest mud and ooze are alone met with. Mr. Austen observes that this rule holds good in every part of the English Channel examined by him. He also informs us, that where the tidal current runs rapidly in what are called "races," where surface undulations are perceived in the calmest weather, over deep banks, the discoloration of the water does not arise from the power of such a current to disturb the bottom at a depth of 40 or 80 fathoms, as some have supposed. In these cases, a column of water sometimes 500 feet in height, is moving onwards with the tide, clear and trans-

* Stevenson on the Bed of the German Ocean or North Sea. — Ed. Phil. Journ. No. v. p. 47. 1820.