it into their present position. The level surface of the chalk *in situ* (*d*) may be traced for miles along the coast, where it has escaped the violent movements to which the incumbent drift has been exposed.*

We are called upon, then, to explain how any force can have been exerted against the upper masses, so as to produce movements in which the subjacent strata have not participated. It may be answered that, if we conceive the *till* and its boulders to have been drifted to their present place by ice, the lateral pressure may have been supplied by the stranding of ice-islands. We learn, from the observations of Messrs. Dease and Simpson in the polar regions, that such islands, when they run aground, push before them large mounds of shingle and sand. It is therefore probable that they often cause great alterations in the arrangement of pliant and incoherent strata forming the upper part of shoals or submerged banks, the inferior portions of the same remaining unmoved. Or many of the complicated curvatures of these layers of loose sand and gravel may have been due to another cause, the melting on the spot of icebergs and coast ice in which successive deposits of pebbles, sand, ice, snow, and mud, together with huge masses of rock fallen from cliffs, may have become interstratified. Ice-islands so constituted often capsize when afloat, and gravel once horizontal may have assumed, before the associated ice was melted, an inclined or vertical position. The packing of ice forced up on a coast may lead to a similar derangement in a frozen conglomerate of sand or shingle, and, as Mr. Trimmer has suggested, † alternate layers of earthy matter may have sunk down slowly during the liquefaction of the intercalated ice so as to assume the most fantastic and anomalous positions, while the strata below,

* For a full account of the drift of East Norfolk, see a paper by the author, Philosophical Magazine, No. 104, May, 1840.

† Quarterly Journal, Geological Society, vol. vii. pp. 22, 30.