

in the ocean, though not in the profounder abysses. These movements have been observed in straits between islands or submarine ridges, and they are doubtless connected with the tidal wave. They seem to possess sufficient scour to prevent the accumulation of sediment, but whether they are effective in eroding hollows on the sea-floor, as has been claimed for them, may be doubted. Their power to dig out hollows or to deepen and widen channels must depend not merely on their velocity but upon the presence of detritus which they can use in abrasion, for without this detritus they could not remove the surface of hard rocks.²⁸¹

(vi.) *Ice-Erosion*.—Among the erosive operations of the sea must be included what is performed by floating ice. Along the margin of Arctic lands, a good deal of work is done by the broken-up floe-ice and ice-foot, both in abrasion and in deposit. Cakes of ice, driven ashore by storms, tear up and redistribute the soft shallow-water or littoral deposits, rub and scratch the rocks, and push gravel and blocks of rock before them as they strand on the beach. Icebergs also, when they get aground in deep water, must greatly disturb the sediment accumulating there, and may grind down any submarine rock on which they grate as they are driven along. The geological operations of floating ice were formerly invoked by geologists to explain much that is now believed to have been entirely the work of ice on land.²⁸²

(3) *Transport*.—By means of its currents, the sea transports mechanically-suspended sediment to varying dis-

²⁸¹ The potency of tidal action has long been maintained by Mr. T. Mellard Reade, *Proc. Geol. Soc. Liverpool*, 1873; *Phil. Mag.* xxv. 1888, p. 338.

²⁸² For an account of the work of floating ice ("pan-ice") see H. Y. Hind, *Canadian Naturalist*, viii. 1878, p. 229.