

Tay. A cast-iron cylinder (such as was employed in constructing the concrete basements for the piers), which had been below water for only sixteen months, was found to be so corroded that a penknife could be stuck through it in many places. An examination of the shore will sometimes reveal a good deal of quiet chemical change on the outer crust of wave-washed rocks. Basalt, for instance, has its felspar decomposed, and shows the presence of carbonates by effervescing briskly with acid. The augite is occasionally replaced by ferrous carbonate. The solvent action of sea-water on calcareous organisms is referred to on pp. 73, 823.

B. *Mechanical*.—It is mainly by its mechanical action that the sea accomplishes its erosive work. This can only take place where the water is in motion, and, other things being equal, is greatest where the motion is strongest. Hence we cannot suppose that erosion to any appreciable extent can be effected in the abysses of the sea, where the only motion is probably the slow creeping of the polar water. But where the currents are powerful enough to move grains of sand and gravel, a slow erosion may take place even at considerable depths. It is in the upper portions of the sea, however—the region of currents, tides, and waves—that mechanical erosion is chiefly performed. The depth to which the influence of waves and groundswell may extend seems to vary greatly according to the situation (ante, p. 736). A good test for the absence of serious abrasion is furnished by the presence of fine mud on the bottom. Wherever that is found, we may be tolerably sure that the bottom at that place lies beyond the reach of ordinary breaker-action.²⁶⁹ From the superior limit of the accumulation of mud up to high-water mark,

²⁶⁹ T. Stevenson on "Harbors," p. 15.