(ii.) The alternate compression and expansion of air in crevices of rocks exposed to heavy breakers dislocates large masses of stone, even above the direct reach of the waves. It is a fact familiar to engineers that, even from a vertical and apparently perfectly solid wall of well-built masonry exposed to heavy seas, stones will sometimes be started out of their places, and that when this happens, a rapid enlargement of the cavity may be effected, as if the walls were breached by a severe bombardment. At the Eddystone lighthouse, during a storm in 1840, a door which had been securely fastened against the force of the surf from without, was actually driven outward by a pressure acting from within the tower, in spite of the strong bolts and hinges, which were broken. We may infer that, by the sudden sinking of a mass of water hurled against the building, a partial vacuum was formed, and that the air inside forced out the door in its efforts to restore the equilibrium.[273] This explanation may partly account for the way in which the stones are started from their places in a solidly built sea-wall. But besides this cause, we must also consider a perhaps still more effective one in the condensation of the air driven before the wave

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reduced when in water, and still more in sea-water. The following examples will illustrate this fact (T. Stevenson's "Harbors," p. 107):

—	Specific Gravity	No. of cubic feet to a ton in air	No. of feet to a ton in sea-water of specific gravity 1·028
Basalt	2·99	11·9	18·26
Red granite . . .	2·71	13·2	21·30
Sandstone . . .	2·41	14·8	26·00
Cannel Coal . . .	1·54	23·3	70·00

[273] Walker, Proc. Inst. Civ. Engin. i. p. 15; Stevenson's "Harbors," p. 10.