the pressure in pounds and 64 the weight of a cubic foot of sea water), $\sqrt{\frac{6083 \times 32{\cdot}2}{64}} = 55{\cdot}32$ feet. The hydrostatic pressure due to a wave 20 feet high is over (1280 lbs.) half a ton to the square foot; the rest of the force comes from its velocity. Mr. Stevenson states that on one of the Hebrides a mass of rock of about 42 tons weight was gradually moved in a storm five feet; with each incoming wave it was made to lean landward, and the back run uplifted it with a jerk, leaving it with little water about it.

It is reported that at Unst, one of the Shetlands, walls were overthrown and a door broken open at a height of 196 feet above sea level. Geikie attributes part of the effects of the impact to the compression of the air of cavities by the striking waters, and then its sudden expansion, with tearing effects; and also to the rarefaction of air caused by the sudden withdrawal of the waters after a broad stroke, this leading to displacement of blocks or masses. He mentions the case of a securely fastened door at the Eddystone Lighthouse forced *outward* by the stroke of the outside surface by a wave; and suggests that the principle may account for stones being started from their places in a solidly built stone wall. The water driven into crevices has great rending force.

The heaviest waves exert little force against rocky cliffs, or the sea-bottom, below a depth of 15 or 20 feet. Their abrading action cannot, therefore, shear off cliffs, or wear away an island in the ocean, to a lower level. This principle is recognized in making defense walls of masonry against breakers by planting the wall out where the depth is 15 to 20 feet.

Waves, as they march up a shore, sometimes throw stones to great heights. Geikie cites the report that during northwesterly gales the windows of the Dunnet Head Lighthouse, at the northern extremity of Scotland, 300 feet above high water, are sometimes broken by stones from the enormous breakers.

In view of the force at work it is not surprising that, in regions like Cape Horn, or the coast of Scotland, where storms are common, cliffs should undergo constant degradation, be fronted by lofty castellated and needle-shaped rocks, and that the land should be pierced at times for blow-holes where layers of easy removal, or dikes or veins, face the breakers.

The following figures from a memoir by Professor Shaler illustrate well some of the results. They represent scenes on the coast of Maine, near Mount Desert.

Fig. 190 shows a detached rock on its march seaward; and Fig. 191 a pile of displaced masses as it was left at the base of a cliff before an elevation of the coast of 220 feet. All the processes of rock-destruction help in this work of degradation, — the opening of rifts by intruding moisture, or by oxidation, or by change of temperature, or by growing plants and the decay of weak portions of the rocks. Under the incessant beating, every stroke tends to slip out of place masses, however large, that rest on a surface not perfectly horizontal.