

the rocks of the shore ; brought back by the recoil of the wave, they are caught up again by its successor and once more hurled forwards upon the rocks. And thus, by what has been aptly termed a kind of sea-artillery, even the hardest rocks of an iron-bound shore are worn away. Moreover, a huge billow, falling on a cliff that is penetrated by many cracks and passages, drives the air into these with prodigious force. The consequent contraction and expansion of the air must needs act with great effect in widening clefts and helping to disrupt rocks. The hydraulic pressure of large waves which fall upon cliffs with a force equivalent to a pressure of three tons on the square foot, cannot but tend also to dislodge masses of solid rock.

To see the character and effects of sea-action, the observer should betake himself to some rocky shore on which falls the full roll of the Atlantic. He will there find, if the coast be a precipitous one, that the rocks above the reach of the waves are rough and ragged, showing everywhere traces of that sub-aërial waste which, acting along their natural joints, has slowly shattered the crags and sent down huge blocks to the beach below. There, the fallen ruin, coming within reach of the waves, is turned into a further means of augmenting the destruction of the cliffs. Ground down by the waves into well-worn boulders, it is driven up against the cliffs, which along their base are smoothed and polished like the shingle. The line between the rough surface overhead, marking the progress of the atmospheric waste, and the well-worn zone of the beach, pointing to the work of the sea, is often singularly sharp. But the base of the cliff is not merely polished by the friction of the boulders ; it is in many places hollowed out into overhanging recesses, clefts, and caves. At the farther end of one of these excavations may be seen the rounded boulders that are carrying