

between the joints and crevices of the stones, and its subsequent instantaneous expansion when the wave drops. During gales, when large waves are driven to shore, many tons of water are poured suddenly into a cleft or cavern. These volumes of water, as they rush in, compress the air into every joint and pore of the rock at the further end, and then, quickly retiring, exert such a suction as from time to time to bring down part of the walls or roof. The sea may thus gradually form an inland passage for itself to the surface above, in a "blow-hole" or "puffing-hole," through which spouts of foam and spray are in storms shot high into the air.

On the more exposed portions of the west coast of Ireland, and on the north coast of Cornwall, numerous examples of such blow-holes occur. In Scotland, likewise, they may often be observed, as in the Bullers (boilers) of Buchan on the coast of Aberdeenshire, and the Geary Pot near Arbroath. Magnificent instances occur among the Orkney and Shetland Islands, some of the more shattered rocks of these northern coasts being, as it were, honeycombed by sea-tunnels, many of which open up into the middle of fields or moors.

(iii.) The hydraulic pressure of those portions of large waves that enter fissures and passages tends to force asunder masses of rock. The sea-water which, as part of an intrushing wave, fills the gullies and chinks of the shore-rocks, exerts the same pressure upon the walls between which it is confined as the rest of the wave is doing upon the face of the cliff. Each cleft so circumstanced becomes a kind of hydraulic press, the potency of which is to be measured by the force with which the waves fall upon the rocks outside—a force which often amounts to three tons on the square foot. There can be little doubt