

of hornstone, and the gneiss has a red and burnt appearance, approaching in its nature to porphyry. It is probable that the action of the basalt on the sides of the gneiss rock had softened it and rendered it more liable to disintegrate than the other parts; for the sea has here made an indentation inland, forming a deep narrow ravine or bay, with a lofty wall of basalt running through it. The wall of basalt completely divides the bay, and the sea enters on both sides of the basalt. It has been before observed, that when basaltic dykes extend into the sea, they form reefs of rocks, and small islands. These basaltic walls, whether rising above the surface of the country, or extending into the sea, serve to mark the destruction of the land; for we are certain, that these walls of mineral matter, were at one period supported on each side by rocks or strata which they have intersected, but which are now worn away. The Cleveland basalt dyke, it has been stated, cuts through the transition limestone; the coal strata, and the upper secondary strata, comprising a part of the oolite formation. On the northern coast of Ireland, Messrs. Buckland and Conybeare discovered a considerable basaltic dyke, passing through the chalk rocks. In the immediate contiguity of basalt, the chalk on each side of the dyke was rendered highly indurated and crystalline, this effect decreasing as the distance from the dyke increased.

The constant occurrence of dykes in basaltic districts, gives a high degree of probability to the opinion, that overlying unconformable trap rocks have been erupted through these dykes in a melted state like lava, and have been poured over the surface of the ground. Where extensive beds of basalt occur in low situations, there can be little difficulty in admitting this mode of formation; but the frequent occurrence of beds of basalt, forming isolated caps on distant mountains, was for a long time considered as opposing completely the hypothesis of the igneous origin of basaltic rocks. A more attentive examination of basaltic districts has however established the fact, that these isolated caps of basalt are parts of extensive continuous beds, which have in remote ages been excavated and intersected by valleys, in the same manner as the beds of other rocks which frequently form isolated caps on detached mountains. Isolated caps of basalt are also, in some situations, formed like caps of modern lava, which extend to no great distance from the summit of a volcano. Professor Sedgwick of Cambridge, in an interesting description of "*The Phenomena connected with some Trap Dykes in Yorkshire and Durham*," given in the Transactions of the Cambridge Philosophical Society, states, that "In the quarries now excavating near Bolum, the vertical dyke is unusually contracted in its dimensions; but, on reaching the surface, it undergoes a great lateral extension, especially on the south-west side, so that the works are conducted, in a perpendicular face of columnar trap, more than two hundred feet wide." The annexed cut (copied from that of Professor Sedg-