

fire in its formation. I saw this eminent geologist soon after his return from Cumberland and Westmoreland; and if I recollect distinctly his opinion respecting the mountains of porphyritic trap and clinkstone intermixed with slate in these counties, it was, that they bore a striking resemblance to some of the most ancient volcanic mountains in Auvergne, and that, like them, they had been softened *in situ*, and elevated by subterranean heat. The operation of igneous agency in these mountains is much less evident than in the porphyry of Norway, if the description given of it be correct. The only porphyry occurring in unconformable beds that I have seen in Cumberland or Westmoreland, covers part of a mountain of coarse slate, on the right-hand side of the road going from Kendal to the granite mountain of Shap. It forms a nearly horizontal bed composed of red felspar, which has an earthy texture, and contains crystals or grains of quartz; it is what the French would denominate a red trachyte. Considerable fragments of the same rock are scattered in the adjacent valleys, proving that at a former period, this porphyry was more extensively spread over that district. A red porphyritic felspar, nearly similar in composition and appearance, forms the top of the mountain called Red Pike above the lake Buttermere in Cumberland. Closely adjacent to Red Pike, and forming part of the same ridge, is the mountain called High Stile. Between the summits of these mountains is a deep crater with a small lake or tarn at the bottom of it; the sides of this crater are very steep; it is partly surrounded by rude columns of clinkstone on one side; the porphyritic felspar of Red Pike forms the other side. The clinkstone has a smooth conchoidal fracture and a greenish grey colour; it contains small crystals of felspar, and is slightly translucent on the edges and very fusible; it is highly sonorous when struck with a hammer. The height of High Stile is 2100 feet above the level of the sea; the depth of the crater is about 500 feet; the side nearest the lake of Buttermere, by which alone it can be entered, is partly open. Situated as it is on the summit of a very narrow steep mountain range, that divides the valley of Buttermere from Ennerdale, no conceivable operation of water could have scooped out the crater, and the bed of the lake within it.

Though the rocks which surround this crater are closely allied to volcanic rocks, and have probably been subjected to the agency of subterranean fire, yet the crater is not composed of lava and scorix, like that of modern volcanoes. Cader Idris, in Merionethshire, is similar in composition and structure to High Stile; it has also a deep crater, with a small lake at the bottom. The opinion of Von Buch, that some volcanic mountains have been upheaved bodily in a solid mass, would, if admitted, elucidate the formation of these mountains: the craters may not have ejected lava, but may have served for vents to the elastic fluids or steam that, combined with heat, were the agents by which the mountains were upheaved; or we may suppose the