

lava, as they fell round the vent, were cemented together into one compact mass, in consequence of continuing to be in a half-melted state.

If we pass from the upper to the lower Eifel, from A to B (see map, p. 538), we find the celebrated lake-crater of Laach, which has a greater resemblance than any of those before mentioned to the Lago di Bolsena, and others in Italy—being surrounded by a ridge of gently sloping hills, composed of loose tuffs, scoriæ, and blocks of a variety of lavas.

One of the most interesting volcanos on the left bank of the Rhine, near Bonn, is called the Roderberg. It forms a circular crater nearly a quarter of a mile in diameter, and 100 feet deep, now covered with fields of corn. The highly inclined strata of ancient sandstone and shale rise even to the rim of one side of the crater; but they are overspread by quartzose gravel, and this again is covered by volcanic scoriæ and tufaceous sand. The opposite wall of the crater is composed of cinders and scorified rock, like that at the summit of Vesuvius. It is quite evident that the eruption in this case burst through the sandstone and alluvium which immediately overlies it; and I observed some of the quartz pebbles mixed with scoriæ on the flanks of the mountain, as if they had been cast up into the air, and had fallen again with the volcanic ashes. I have already observed, that a large part of this crater has been filled up with loess (p. 123).

The most striking peculiarity of a great many of the craters above described, is the absence of any signs of alteration or torrefaction in their walls, when these are composed of regular strata of ancient sandstone and shale. It is evident that the summits of hills formed of the above-mentioned stratified rocks have, in some cases, been carried away by gaseous explosions, while at the same time no lava, and often a very small quantity only of scoriæ, has escaped from the newly-formed cavity. There is, indeed, no feature in the Eifel volcanos more worthy of note, than the proofs they afford of very copious aëriform discharges, unaccompanied by the pouring out of melted matter, except, here and there, in very insignificant volume. I know of no other extinct volcanos where gaseous explosions of such magnitude have been attended by the emission of so small a quantity of lava. Yet I looked in vain in the Eifel for any appearances which could lend support to the hypothesis, that the sudden rushing out of such enormous volumes of gas had ever lifted up the stratified rocks immediately around the vent, so as to form conical masses, having their strata dipping outwards on all sides from a central axis, as is assumed in the theory of elevation craters, alluded to in Chap. XXIX.

*Trass.*—In the Lower Eifel, eruptions of trachytic lava preceded the emission of currents of basalt, and immense quantities of pumice were thrown out wherever trachyte issued. The tufaceous alluvium called *trass*, which has covered large areas in this region and choked up some valleys now partially re-excavated, is unstratified. Its base consists almost entirely of pumice, in which are included fragments of basalt and other lavas, pieces of burnt shale, slate, and sandstone, and nume-