

cut at S. In this instance we have the effects of protrusion, and the cause, displayed in the same hill. It is true, the black compact toadstone had not been reached in 1830, but a great mass of indurated green earth, which always accompanies it, and is regarded by the miners as toadstone, and is called by the same name, had been penetrated many yards. It was so hard as to require blasting. On one side of this hill is what is called a pipe vein or opening between the strata, filled with metallic ore. This is represented in the cut at *d*; the workings in this vein, have been continued nearly round the hill. Near the top of the hill there are quarries worked, which display the strata rising towards the summit on each side. Having shown that the mountain limestone of Derbyshire assumes, in many parts, the arched stratification, it may easily be conceived how persons, not aware of the circumstance, may have fallen into great mistakes in attempting to describe the succession of beds along a certain line; for the same beds, if arched, may rise near the surface, or above it repeatedly, in the same country. (See Plate I. fig. 2.)

Other effects of the proximity of trap or toadstone on limestone will be noticed in Chap. IX.

I cannot omit, before leaving the mountain limestone of Derbyshire, to cite an instance of the influence which erroneous observations, combined with false theories, may have in retarding the progress of geology. Some years since, when it was the prevailing desire of many English geologists to make the different rocks agree with Werner's arrangement, and they were perplexed how to dispose of the mountain limestone—whether to place it in the transition class, or what were called the *flötz* rocks (or flat rocks,) in which class were included the upper secondary strata—an eminent chemist from the North country, who affected a profound knowledge of geology, went into Derbyshire to decide the question, and observing the strata opposite Matlock Bath to appear horizontal, he published an oracular opinion that the limestone of Derbyshire, was *flötz*; and this opinion continued for some time to mislead the followers of Werner in this country. Now, had this observer taken the pains to obtain a true section of the strata, he might have discovered, that instead of being flat, they were inclined at an angle of thirty or forty degrees. (In Plate I. fig. 6.) The strata, seen in the line of bearing do appear horizontal, whereas the section in the line of dip shows their true elevation. Nothing, however, can be more puerile than to form a classification of rocks, on a circumstance so variable as the position of the beds; and the name *flötz* is now banished from geology.*

* We are not, however, free from the effects of this erroneous classification. Some English geologists, finding that the characters of mountain limestone agreed with that of transition limestone, but in awe of the decision which pronounced it to be *flötz*, invented a new name, *Carboniferous limestone*, which is singularly inappropriate.