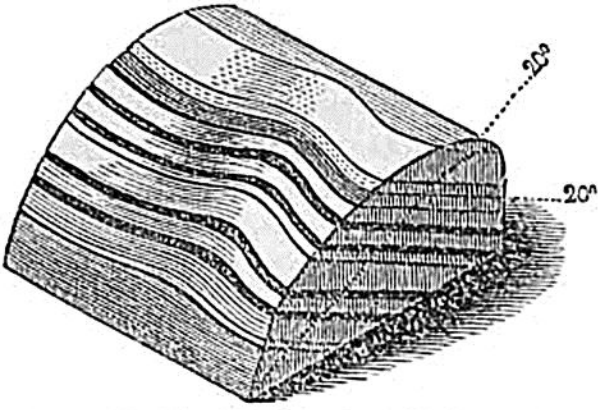
Fig. 76.



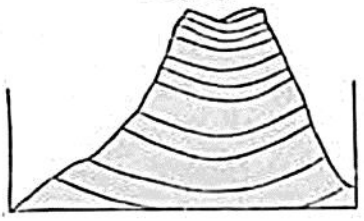
Slope of valley 20°, dip of strata 20°, in opposite directions.

a valley, which declines in an opposite direction at 20°.*

These rules may often be of great practical utility; for the different degrees of dip occurring in the two cases represented in figures 74 and 75, may occasionally be encountered in following the same line of flexure at points a few miles distant from each other. A miner unacquainted with the rule, who had first explored the valley (fig. 74), may have sunk a vertical shaft below the coal-seam A, until he reached the inferior bed B. He might then pass to the valley fig. 75, and discovering there also the outcrop of two coal-seams, might begin his workings in the uppermost in the expectation of coming down to the other bed A, which would be observed cropping out lower down the valley. But a glance at the section will demonstrate the futility of such hopes.

In the majority of cases, an anticlinal axis forms a ridge, and a synclinal axis a valley, as in A, B, fig. 62, p. 48; but there are exceptions to this rule, the beds sometimes sloping inwards from either side of a mountain, as in fig. 77.

Fig. 77.



On following one of the anticlinal ridges of the Jura, before mentioned, A, B, C, fig. 71, we often discover longitudinal cracks and sometimes large fissures along the line where the flexure was greatest. Some of these, as above stated, have been enlarged by denudation into valleys of considerable width, as at C, fig. 71, which follow the line of strike, and which we may suppose to have been hollowed out at the time when these rocks were still beneath the level of the sea, or perhaps at the period of their gradual emergence from beneath the waters. The existence of such cracks at the point of the sharpest bending of solid strata of limestone is precisely what we should have expected; but the occasional want of all similar signs of fracture, even where the strain has been greatest, as at *a*, fig. 71, is not always easy to explain. We must imagine that many strata of limestone, chert, and other rocks which are now brittle, were pliant when bent into their present position. They may have owed their flexibility in part to the

* I am indebted to the kindness of T. Sopwith, Esq., for three models which I have copied in the above diagrams; but the beginner may find it by no means easy to understand such copies, although, if he were to examine and handle the originals, turning them about in different ways, he would at once comprehend their meaning, as well as the import of others far more complicated, which the same engineer has constructed to illustrate *faults*.