

trusive dike or mass of basalt, or where, as in the case of the Rhine at Schaffhausen, and possibly in that of the Niagara, the stream has been diverted out of its ancient course by glacial or other deposits, so as to be forced to carve out a new channel, and rejoin its older one by a fall.¹⁶² In these and all other cases, the removal of the harder mass destroys the waterfall, which, after passing into a series of rapids, is finally lost in the general abrasion of the river-channel.

The resemblance of a deep narrow river-gorge to a rent opened in the ground by subterranean agency, has often

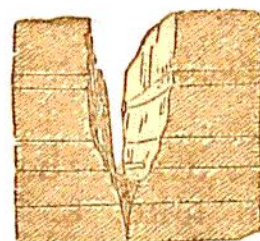
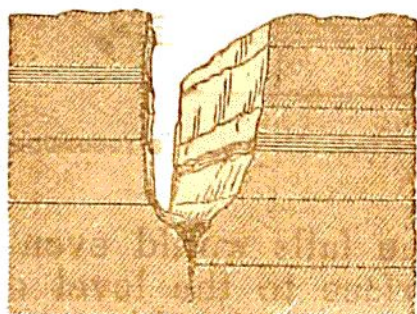


Fig. 121.—River-gorge in line of **Fault**. Fig. 122.—River-gorge in fissured strata,

led to a mistaken belief that such marked superficial features could only have arisen from actual violent dislocation. Even where something is conceded to the river, there is a natural tendency to assume that there must have been a line of fault and displacement as in Fig. 121, or at least a line of crack, and consequent weakness (Fig. 122). But the existence of an actual fracture is not necessary for the formation of a ravine of the first magnitude. The gorge of the Niagara, for example, has not been determined by any dislocation. Still more impressive proof of the same fact is furnished by the most marvellous river-gorges in the world—those of the Colorado region in North America.

¹⁶² Würtemberger, Neues Jahrb. 1871, p. 582.