

stance of rocks to its exit in a spring, without teaching us that these rocks are continually undergoing waste, and that this waste is proportional to the nature of the rocks. Rain-drops bring down carbonic acid, and thus exert a chemical as well as mechanical action. In favourable circumstances, the actual channels which they make are preserved. On the wide and bare surfaces around Ingleborough and Penyghent, and on Hutton Roof Crags, west of Kirkby Lonsdale, these channels are innumerable, of all breadths and depths, and of lengths and direction depending on the slope and continuity of the masses. Where the strata are level, the little ramifications of the rain-channels run deviously, and terminate in the numerous natural joints; but where, as on Hutton Roof Crags, the strata acquire a steep arched slope, the channels take the direction of the slope, run together as valleys do, and collect into miniature dales, till some great fissure lying across their path swallows them up. Below this joint, other channels commence, to be in their turn swallowed up (see Geol. Proc. 1831, vol. i. p. 323).

The fissures here indicated are natural joints of the rock, produced by contraction during its consolidation; they are often symmetrically disposed (prevalent directions are N.N.W. and E.N.E.), and by dividing the mass of the limestone present easy passages downward for water. Thus Malham Tarn delivers itself, not by a surface-channel, but by subterranean passages: the river Nid is swallowed up near Lofthouse: streams which gather on the moorland fells, sink into smaller holes of the limestone below, or wind through subterranean caverns. These fissures, by giving passage to water, suffer enlargement so as to become rifts between cliffs, or channels round insulated peaks or jutting crags. Gordale, a good example of these effects, will again attract our attention. (See Pl. XX.)

Where the fissures have one prevalent direction, the rock is split into vertical plates: a second set of joints developes prisms in these. Large joints, thus crossing at intervals, produce huge vertical masses, which, in consequence of the removal of adjoining parts, often stand out like prominent towers of a Cyclopean