

*Effects of Rivers.*

A river thus fed by springs of water not pure, partially filled with earthy matter, flowing with various velocities through soil and among rocks of unequal resisting power, and formed of particles of different magnitude and specific gravity, must exhibit in its long course a great diversity of appearances. Some rocks and soils it may corrode chemically, others it may grind away by its own force and the aid of the sand and particles which go with it: from steep slopes it must, in general, transport away all the loose materials; but when its course relents, these must drop and augment the land. The finest particles are first taken up and last laid down, the larger masses make the shortest transit.

Rivers, on whose course no lake interposes its tranquillising waters, may be considered as constantly gathering, incessantly transporting, and continually depositing earthy materials. It is, of course, principally in times of flood, that they both gather the most materials, and transport them farthest; yet even in the driest season, the feeblest river does act on its bed, wears by little and little even the hardest stones, and works its channel deeper or wider. This it does, partly by the help of some chemical power, from carbonic acid, and other admixtures, but principally by the grinding agency of the sand, pebbles, &c. which it moves along. In times of flood, these act with violence like so many hammers on the rocks, ploughing long channels on their surface, or whirling round and round in deep pits, especially beneath a fall, or where the current breaks into eddies over an uneven floor of stone. This is admirably seen at Stenkrieth Bridge in Westmoreland, under the waterfalls about Blair Athol, and in North Wales, and, indeed, very commonly. Not unfrequently, on mountain sides or tops, far from any stream or channel, phenomena somewhat similar occur, sometimes the effect of rain, sometimes, we may