

are composed of more solid rocky masses than the bays on either side. Thus Flamborough Head, a mass of rather firm chalk, projects between the sands, clays and gravels of Holderness, and the clays of Filey Bay; the calcareous ledges of Filey Brig in like manner stretch out into the sea, between bays of softer matter; Scarborough Castle Hill is a third example. (See the Geological Map.)

Looking specially to the action of water now running in the valleys, we observe that the very channel is marked by peculiarities of the same kind, and depending on the same conditions. To instance only the most beautiful of the peculiarities of our northern rivers, the 'forces' and rapids, which impart so much interest to the Valley of the Yore. In accompanying many little streams which descend from the moors, several hundred feet before they reach the river, we find at almost every point where limestone beds rest upon shale, and often where sandstone beds take the similar position, a *step* in the channel, over which the water falls a few inches, a few feet, or many yards, according to circumstances. Each of these little cascades is subject to displacement. The limestone beds are slightly worn away and excavated by the sharp sands and pebbles which the stream brings downwards, but this is a feeble element of change. A more powerful effect is occasioned when the rock is *undermined* by the more rapid waste of the shale, and it consequently breaks off at one of the numerous natural joints, and falls. Thus the operation by which Niagara has been removed, and is undergoing removal, which has furnished to Sir C. Lyell most interesting reflections, may be witnessed on hundreds of streams in Yorkshire. The scale is microscopic, indeed, but the results are of the same order, fully as instructive and not less impressive on the mind.

The mere action of the humid and variable atmosphere of England, is wasting, every hour, the surfaces of what are vainly thought to be eternal hills. Even the drop of rain cannot be traced from the cloud, over the surface and through the sub-