

streams attained, and the unusual length of time that the 'spate' endured, combined to work an altogether unprecedented amount of havoc in all the rivers descending from the northern flank of the Grampians through the counties of Nairn, Moray, and Banff. In some of the narrow gorges, the streams rose forty or fifty feet above their normal level, and such was the force with which the swollen waters rushed along, that well-built stone bridges were swept away, sometimes in one solid mass that shot down the flood for some yards before it went to pieces. Hundreds of acres of fertile land were torn up, and their soil carried to the sea. Banks of clay forty feet or more in height were cut into, and huge slices of them sank into the rivers and were soon demolished. Altogether a greater amount of havoc was probably wrought in those three days than has been done by the same streams during all the years that have since elapsed.¹

It will be seen that in using rivers as one of her sculpture tools, Nature produces two distinct kinds of effects with them. On the one hand, she carves out their channels, graving these more and more deeply upon the surface of the land, so that when once traced out they are hardly ever effaceable, save by some gigantic catastrophe that disrupts or buries the surface of the land, and entirely changes the lines of drainage. On the other hand, she makes use of rivers as instruments for removing all the detritus which, in the course of her carving operations, she produces over the surface of the land, whether by the rivers themselves or by other subaërial agencies. The sediment thus carried away is borne along as far as the carrying power of the streams will permit. Whatever checks the rate of flow of the water diminishes its capacity for trans-

¹ For a graphic account of this great disaster to the north of Scotland, see Sir Thomas Dick Lauder's *Account of the Great Floods of August 1829 in the Province of Moray and Adjoining Districts*. 1830.