

the Midland Valley, and probably stretched south-westward into the north of Ireland, and north-eastward across what is now the floor of the North Sea. The lake, I believe, owed its origin to the subterranean movements just referred to. It was an area of depression bounded on the north-west and south-east by tracts that were undergoing uplift. The energy of the underground forces is well shown in the thick masses of lava and volcanic ashes that were discharged from numerous volcanoes along the floor of the lake, and now form important ranges of hills. In the Pentland Hills these accumulations are at least 5000 feet thick, and in the Ochil Hills they exceed 6000 feet.

Originally, of course, the Lower Old Red Sandstone covered the whole of the Midland Valley. But in the course of long ages of geological change, its superficial area has been restricted, chiefly owing to the spread of younger formations above it. Yet it still occupies wide belts of country, and forms the highest and most picturesque ground in central Scotland. It runs along the northern side of the Lowlands from the coast of Kincardineshire and Forfarshire south-westward across the island to the Firth of Clyde, where it is well seen in Arran. Along this northern belt, its associated volcanic sheets form the long chain of the Sidlaw and Ochil Hills. I have already referred to the evidence that the Old Red Sandstone of this district once extended northwards into the Highlands. No one can walk along the conglomerate hills between Callander and Crieff, without recognising how strong is the proof that such was the case (*ante*, p. 141, and Figs. 29, 30).

There is no corresponding continuous broad belt of Lower Old Red Sandstone along the southern borders of the Midland Valley. The same kind of rocks, however, appear there in a tract of moory heights stretching from the