

masses are well seen. The more conspicuous hills, such as Peniel Heugh, Dunian Hill, and Rubers Law [288, 310] are all hard, volcanic rocks, from which the surrounding and overlying stratified rocks have been worn away; (3) **Duns** and **Greenlaw**; from Duns Law, also a projecting igneous mass, an extensive view is obtained of the whole Merse up to the Cheviots, while the range of the Southern Uplands rises immediately behind. The valley of the Whiteadder is a characteristic sample of the valleys in these uplands. To the west of Duns the best group of kames [369] in the south of Scotland is to be seen, between two and three miles north of Greenlaw.

Berwick to Edinburgh.—Glimpses of the coast cliffs are here and there obtainable from the railway carriage between Berwick and Burnmouth. Approaching Ayton the line bends away to west, and affords a view of the eastern end of the Lammermuir Hills [281] rising above the low grounds of Berwickshire. It enters these hills beyond Reston station, following the line of the Eye Water. The railway cuttings show the highly-inclined greywacke and shale of the Silurian uplands. About four miles north from Grant's House Station the line emerges from the Lammermuirs, and crosses a series of picturesque ravines which have been cut by small streams in the Upper Old Red Sandstone and Lower Carboniferous rocks. The defile of the Pease Burn is a deep, narrow gorge, which was formerly one of the easily defensible obstacles to the progress of an invading army. To the right lies the fishing village of Cove, with its sandstone cliffs [50], and beyond it, as the train moves on, the whole range of cliffs may be seen to the right, eastward as far as the promontory of Fast Castle. To the left the smooth slopes of the Lammermuir Hills rise steeply above the plain which widens toward the west. **Dunbar**, with its castle and cliffs of volcanic tuff [51, 307], offers many points of interest to the geologist. Out to sea the May Island, crowned with its lighthouse, may be seen lying at the entrance to the estuary of the Forth. The summit of the Bass Rock [333, 356] is a conspicuous object on the right. Approaching the valley of the Tyne at East Linton, the traveller will also see in front of him to the left hand the top of Traprain Law [353], another of the volcanic 'necks' of this region. He is now in the midst of one of the volcanic areas of the Lower Carboniferous system of the Midland Valley [329].