

of the tops of the Highland mountains and of Goatfell in Arran. The **Cathkin Hills**, to the south-east, command the great Clyde coal-field, these heights themselves belonging to the volcanic zone which throughout the west of Scotland lies near the base of the Carboniferous system. The **Fereneze Hills** and **Gleniffer Braes** above Paisley, composed of similar rocks, afford good views across the western extension of the Clyde coal-field, northwards to the Kilpatrick Hills, with the distant Highlands beyond.

Among the many delightful rambles which may be taken from Glasgow there is only room here for a brief outline of the following :—

(1.) **By River to Greenock.**—For many reasons this is one of the first excursions a stranger desires to make. The more prominent geological features are at some little distance from the river, but after sailing between the alluvial platforms and terraces of erosion for some miles, the geologist will observe that, as he approaches Old Kilpatrick, the rising grounds on either hand draw near to each other. These heights consist of a portion of the great volcanic zone near the base of the Carboniferous system [333]. A fault here runs along the south-east side of the volcanic rocks, but the Clyde without deflection strikes across both the fault and the volcanic belt. This is the narrowest part of the valley below Glasgow. The hills on the right are particularly striking. Behind Bowling their terraced sides show the successive outcrops of the beds of lava and tuff of which they consist. As the valley now gradually widens, some conspicuous isolated hills appear on the right beyond the escarpments of the volcanic zone. These are volcanic necks, marking the sites of some of the vents which supplied the lavas of the hills to the east [354]. Dumbarton Rock is the most prominent of them. Looking up the tributary valley of the Leven, the traveller sees Ben Lomond rising beyond the smoke of the manufacturing towns that have been planted along the course of that stream. Gradually the steamer retreats from the north shore, which, beyond Dumbarton, is comparatively featureless, being formed of Carboniferous and Old Red Sandstone. On the south side, however, the same rocks which compose the Kilpatrick Hills rise into prominent heights, and stretch far southwards into Ayrshire. This volcanic series is one of the most prominent features in the geology and topography of the