Pentland Hills, which consist chiefly of lavas and volcanic tuffs, to the Ayrshire coal-field. The well-known ravines and Falls of the Clyde have been excavated in the sandstones of this series.

A long lapse of time passed away between the deposition of the Lower and that of the Upper Old Red Sandstone. The ancient lake, which had been undergoing continuous depression until thousands of feet of sediment were piled up on its floor, appears to have been effaced, its hardened gravels, sands, and lava-sheets were upraised and denuded, and on their upturned and wasted edges the red and yellow sandstones of the upper division were laid down. These younger strata occupy a comparatively unimportant place in the geology of the region. A narrow strip of them follows the lower division for some way along the south flank of the Ochils, until overlapped by Carboniferous strata. More important masses of conglomerate and red sandstone, to which reference was made in Chapter XIII., appear on the south side, rising into conspicuous eminences among the Lammermuir and Pentland Hills, and appearing at intervals westward into Lanarkshire, and southwards to the English border.

The next system in ascending series—the Carboniferous —covers by far the larger part of the Midland Valley. From St. Andrews Bay and the mouth of the Firth of Forth it stretches across the country to the Firth of Clyde, spreading over the whole of the region except where, along the southern margin, the Old Red Sandstone rises from underneath it. The Carboniferous rocks consist chiefly of sandstones, with shales, coals, fireclays, and ironstones. But they include also an abundant series of contemporaneously erupted, as well as subsequently intruded, igneous rocks, to which reference will be made farther on. The total depth of Carboniferous strata cannot be less than 6000 feet. Like the Old

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