

shales and sandstones bearing coals. In fact, viewed as a whole, the Carboniferous series consists only of one great formation, possessing different lithological characters in different areas, these having been ruled by circumstances dependent on whether the strata were formed in deep, clear, open seas, or near land; or actually, as in the case of the vegetable matter that forms the coals, on the land itself.

The English Carboniferous rocks differ from the Scottish beds in this, that in general they have not been mixed with igneous matter, except in Northumberland and Derbyshire, where, in the last-named county, the Carboniferous Limestone is interbedded with ashes and lava, locally in Derbyshire called 'toadstones.' In South Staffordshire, Colebrook Dale, the Clee Hills, and Warwickshire, there is a little basalt and greenstone, which may possibly be of Permian age, intruded into, and perhaps also partly overflowing, the Carboniferous rocks in Permian times; but in Glamorganshire, Monmouthshire, North Staffordshire, Lancashire, and Yorkshire, where the Coal-measures are thickest, no igneous rock of any kind occurs. There and elsewhere in England the Coal-measures as usual consist of alternations of sandstone, shale, coal, and ironstone.

Next in the series come the Permian rocks (2, 3, 4, fig. 30, p. 141), which, however, rarely occupy so great a space in England, as materially to affect the larger features of the scenery of the country. They form a narrow and marked strip on the east of the Coal-measures from Northumberland to Nottinghamshire, where they chiefly consist of a long, low, flat-topped terrace of Magnesian limestone (*see* Map), interstratified