

*Igneous Rocks.*—A very considerable proportion of the trap rocks for which Scotland has long been celebrated is found amongst the strata of the carboniferous system. About Stonehaven, Bervie, Montrose, Arbroath, the Sidlay hills, south of Dunkeld, at Perth, Kinnoul, and Moncrieff, felspathic, basaltic, and amygdaloidal rocks (at Kinnoul yielding various agates) appear among the old red sandstones. The Ochill ranges from the mouth of the Frith of Tay to Stirling, continued in the Campsie hills to Dumbarton, and thence expanding to Greenock and Ardrossan, divide the red sandstone from the coal formation of the Forth and Clyde. From Greenock to Kilmarnock and the Haughshaw hills is a prodigious mass of trap: detached portions occur in Ayrshire; a long range extends from Tinto by the Pentlands to Edinburgh. North Berwick Law, Tantallan, and the Bass, are the extremities of a large body of trap in Haddingtonshire: these rocks abound between Linlithgow and Bothwell; and a great variety of igneous masses occur about Kinghorn, the Lomond hills, and between Cupar and Largo. A considerable proportion of all these extended igneous rocks is connected with the coal formation.

The variety of composition among these rocks is so great, as to defy description in any moderate compass. These rocks, felspathic (porphyry, claystone, clinkstone, &c.), felspatho-pyroxenic (greenstone, basalt, wackè), produce at many points remarkable changes on the adjacent sandstones and shales; hardening both to an extraordinary degree, so as to resemble jasper of different colours. (Salisbury Craig, Stirling Castle, hill of Kinnoul, &c.) At Cumnock, coal is converted to anthracite and plumbago. (See Bouè, p. 122. *et seq.*)

Perhaps the most remarkable variety of igneous rocks yet known in a small compass appears in the island of Arran, generally associated with the red sandstones, and conglomerates. Pitchstone, claystone, hornstone, trachytic porphyry, clay porphyry, basalt, and greenstone, appear in many dikes, and form interposed