

SEDIMENTARY ROCKS

CARBONIFEROUS

Westphalian

d^{ci} **Upper Coal Measures:** Outcrop inferred below Drift deposits filling 'buried channel' of River Devon; strata nowhere exposed but probably consist of reddened sandstones, siltstones, mudstones and seatearths. Any coals originally present are likely to have been oxidised or replaced by carbonate

d^{ci2} **Middle Coal Measures:** Cyclic sequence of sandstones, siltstones, mudstones, coals and seatearths, generally grey but locally, mainly in the upper part, reddened with coals destroyed or replaced by carbonate. The Devon Red Sandstone in the upper part is 36m thick. The sequence is thickest near Clackmannan, whence it thins northwards. In the lower part the coals are mostly thick and persistent, and have been extensively mined. Many of the mudstones contain characteristic faunas of non-marine bivalves which now form mussel bands

d^{ci1} **Lower Coal Measures:** Cyclic sequence of sandstones, siltstones, mudstones, coals and seatearths, which thins northwards and eastwards from Clackmannan. The coals are mostly thick and persistent, and have been extensively mined. Many of the mudstones contain characteristic faunas of non-marine bivalves which now form mussel bands

Westphalian-Namurian

d^{mc} **Passage Group:** Sandstones with subordinate clay-rocks and seatearths (some of which are refractory), thin bands of mudstone, a few coal seams and three thin limestones near the base. The group is thickest between Airth, Clackmannan and Kincardine. Non-sequences are common at the bases of the sandstones, many of which are coarse and pebbly. Small amounts of coal and fireclay have been mined: considerable reserves of fireclay may be present. The lower part of the group is Namurian; the upper part is probably Westphalian

Namurian

d^{m2} **Upper Limestone Group:** Cyclic sequence of sandstones, siltstones and mudstones with fossiliferous marine limestones, generally thin coal seams, seatearths and, in the east, intercalations of tuff. The sequence is thickest near Clackmannan. The Upper Hirst Coal is being extensively mined

d^{m1} **Limestone Coal Group:** Cyclic sequence of sandstones, siltstones, mudstones, coals and seatearths, with one non-marine limestone. Tuff bands are common in the east but die out westwards. The coals are mostly thick and persistent: several have been extensively mined. The sequence thickens eastwards into the Kincardine Basin

Dinantian

d^{li-3} **Calcareous Sandstone Measures:** Strata of Ballagan Beds facies, consisting of mudstones with bands of argillaceous dolomite (cementstone) and of sandstone, the latter mainly in the middle part of the sequence. At least 200m thick

IGNEOUS ROCKS

EXTRUSIVE

Carboniferous

Z Tuff (unclassified); **Z^B** Basaltic tuff

Lower Old Red Sandstone (Devonian)

R^D Rhyodacite
N Trachyandesite
A Andesite; **hA** Hornblende-andesite; **pA** Pyroxene-andesite
fpA Pyroxene-andesite with feldspar phenocrysts
AB Andesite and basalt
B Basalt
fB Olivine-basalt with feldspar phenocrysts
Z Tuff and agglomerate

INTRUSIVE

Probably Permo-Carboniferous

Q^D Quartz-dolerite; **Q^T** Tholeiite and tholeiitic basalt

Probably Carboniferous

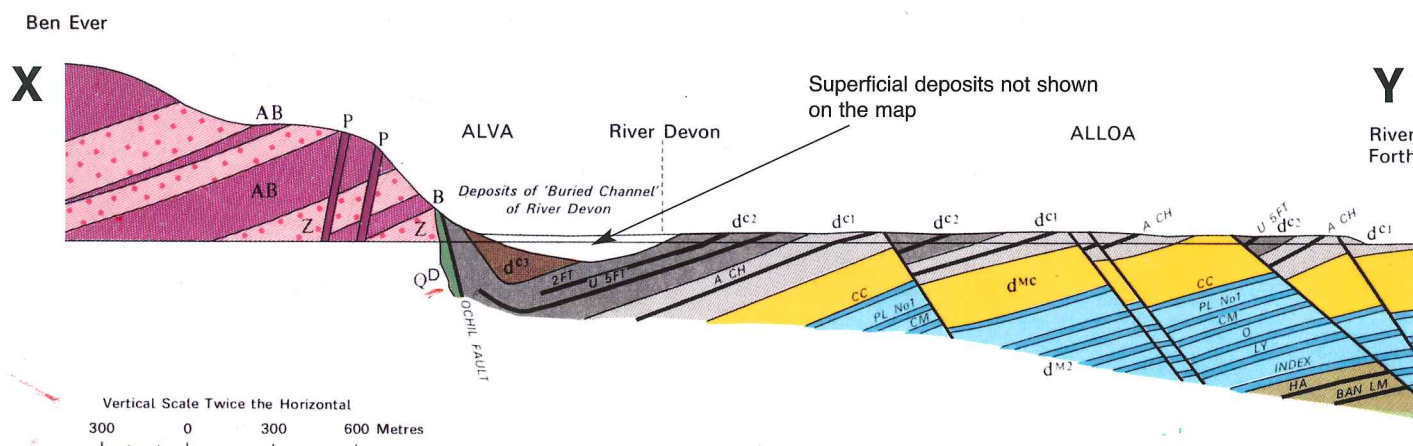
K Mafic or semi-mafic rock (unclassified)
D Olivine-basalt and olivine-dolerite (unclassified)

Carboniferous and Lower Old Red Sandstone (Devonian)

V Agglomerate in vents

Lower Old Red Sandstone (Devonian)

F^P Acid porphyrite; **qF^P** Quartz-albite-porphyry
P Porphyrite; **pP** Plagiophyre; **hP^A** Porphyrite (hornblende-andesite); **pP^A** Porphyrite (pyroxene-andesite)
K^D Dolerite, basalt or tholeiite (undefined)
H Diorite
+++++ Metamorphic aureole



Vertical Scale Twice the Horizontal
300 0 300 600 Metres