

Lower Limestone Shale, Lower Carboniferous, Bristol and Gloucester region

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Green, G W. 1992. British regional geology: Bristol and Gloucester region (Third edition). (London: HMSO for the British Geological Survey.)

Stratigraphy

In the following account the Dinantian rocks are described in ascending stratigraphical order for the whole region, except for those at Cannington Park, which are treated separately.

Lower Limestone Shale

The Lower Limestone Shale is predominantly shaly, but limestone beds are typically present in varying proportions. The formation can be divided into two unequal parts, the lower part being characterised by coarse bioclastic and oolitic limestones, though mudstones and sandstones of Old Red Sandstone facies occur toward the base. Typically, the lowest part has a restricted marine- or brackish-water fauna with *Lingula*, small calcareous brachiopods, gastropods, bivalves including *Modiolus*, ostracods, calcareous algae, bryozoans, conodonts, serpulids and fish. The bioclastic limestones are commonly made up of worn crinoid columnals, but bryozoa debris may locally be abundant. Both these and the oolitic rocks commonly show ripple-marking, current-bedding and various scour features. The limestones may be locally reddened by impregnation with hematite, either throughout the whole rock or just in the skeletal debris.

The upper part of the Lower Limestone Shale consists of greenish grey shale with interbedded dark grey to almost black, crinoidal limestone, which reflect a more open-sea environment. The limestone is often very fossiliferous, with a rich shelly fauna similar to that of the overlying Black Rock Limestone, though it is poor in corals. Passage into the Black Rock Limestone occurs with the upwards increase in the proportion of limestone.

In the Bristol area the lowest part of the formation is locally designated the Shirehampton Beds, with the 'Bryozoa Bed' at the top. The latter is the best known and most persistent of the reddened coarse crinoidal limestones and is overlain by the 'Palate Bed', a thin bone-bed that marks a nonsequence and the change to a dark shale sequence above. In the Mendips the Lower Limestone Shale is comparatively more shaly in its lower part, and the vertical transition from Old Red Sandstone is rapid. Nevertheless, at Burrington Combe a discontinuous reddened crinoidal limestone, some distance above the base, with a fish-bearing shale containing phosphatic nodules immediately above, invites comparison with the Bristol sequence.

The Lower Limestone Shale ranges in thickness from 150 m in the western Mendips to around 40 m on the west side of the Forest of Dean, with an intermediate figure (100 to 110 m) at Bristol and Portishead. This northwards attenuation is irregular and may have been affected by local epirogenic movements ([The Malvern Axis and Pre- and Intra-Carboniferous earth movements, Bristol and Gloucester region](#)).

The main exposures are quarry sections in the lower limestone facies. In the Mendips the railway cutting at Maesbury provides a more or less continuous section through the upper two-thirds of the

succession, including the contact with the Black Rock Limestone.

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