

The stratigraphy and cyclicity of the late Dinantian platform carbonates in parts of southern and western Ireland.

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Abstract

The late Dinantian platform carbonate successions of the Burren, Buttevant and Callan areas in Ireland have been correlated using detailed litho- and biostratigraphy. Several subdivisions or lithofacies associations (LA) of the Asbian to Brigantian part of the succession have been recognized in each area (lithofacies associations 1–5). Holkerian(?) to early Asbian ramp carbonates of LA 1 underlie the late Asbian successions in both the Burren and Buttevant areas. The influx of the bilaminar palaeotextulariid *Cribrostomum lecomptei* coincides with the onset of late Asbian shallow-marine cyclic platform sedimentation (LA 2) in all areas. The sediments of LA 2 have abundant *Kamaenella* and foraminifera, and are characterized by palaeokarstic surfaces and shales that cap a minimum of nine shallowing-upward minor cycles in the Burren and Buttevant areas. Two new biostratigraphic subdivisions (Cf6γ1 and Cf6γ2) of the late Asbian/Cf6γ subzone are described for the first time in this part of the succession. Brigantian sedimentation (LA 3) is typified by amalgamated beds of crinoidal limestone and abundant *Asteroarchaediscidae*. Thin peloidal limestones with coral thickets cap shallowing-upward cycles within this succession. These cycles, which are thinner and less numerous than those of the underlying late Asbian, rarely terminated in emergence, but most reached shallow subtidal depths prior to the next transgression. The change in cyclicity style across the Asbian/Brigantian boundary may be related to the sedimentation rates of the crinoidal limestones, due to increases in cyclic oscillation in the Brigantian. Brigantian LA 4 is characterized by deep subtidal cherty limestones, with abundant algal-coated wackestone intraclasts. *Fasciella* and *Howchinia bradyana* are typical microfossils. No cyclicity is observed, probably owing to the deep subtidal nature of this unit. LA 4 is overlain by another unit of cyclic crinoidal limestones (LA 5) in the Burren, which has no correlatives in the other areas studied. The succession in all areas is unconformably overlain by Namurian siliciclastic rocks. The nature and number of minor cycles in the late Dinantian of Ireland is similar to those of platform successions of the same age elsewhere in the British Isles, suggesting that eustatic changes were one of the major controls on cyclicity during the late Dinantian.