

Irish Dinantian biostratigraphy: practical applications

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Abstract:

For the last two decades there have been considerable advances in the dating and correlation of marine Dinantian carbonate sequences in Ireland, as elsewhere in Europe, primarily through the increased precision made possible by the use of microfossils, such as conodonts, foraminifers and miospores, together with macrofossils such as rugose corals. The advance was accelerated by the availability of boreholes up to 2km deep drilled by mineral exploration companies in Ireland who routinely use biostratigraphy. Detailed biostratigraphic biozonations are now established and are used for geological mapping and borehole zonation.

Data are assessed and attempts are made to highlight some of the practical problems encountered in locating Dinantian stage boundaries, recognizing biozones in Ireland, and suggesting correlations with other biozonation schemes in Europe. Although there are many difficulties in recognizing each of the stage boundaries in Ireland, two in particular present major problems — the Courceyan/Chadian and Holkerian/Asbian boundaries. From the work of Conil, Groessens and co-workers in Belgium, conodont and foraminiferal biozonation has been applied to the British and Irish Dinantian stages. Unfortunately, the bases of both the Chadian and Asbian stages rarely contain the zonal taxa. Also, at both stratigraphic levels, there are difficulties in comparing basinal and platform faunas. New biostratigraphic data in Ireland have permitted the recognition of two new intervals within the late Asbian Cf6 γ Subzone, referred to informally as Cf6 γ 1 and Cf6 γ 2.

Until the Dinantian stages in Britain and Ireland are redefined biostratigraphically in the existing stratotype sections, or new stratotype sections are defined with faunal criteria, it is becoming more expedient and practical to recognize and define biozones in Ireland which can be identified and correlated with other Dinantian sections in continental Europe. This paper presents correlations with Belgian and Russian biostratigraphic schemes.