

Tienne Sainte-Anne bioherms (upper Eifelian, Middle Devonian) of southern Belgium: palaeoecology, development and faunal assemblage

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Along the southern margin of the Dinant Synclinorium of southern Belgium, small lense-like reefs are developed in the upper Eifelian. They display the development pattern typical of Devonian bioherms, starting on crinoidal gravel stabilised by lamellar stromatoporoids. This first stage provides a firm ground for the development of larger and thicker stromatoporoids that suggest a growth in a shallow, tubulent and clear-water environment. A progressive deepening, due to the transgression and increase of accommodation space is recorded in the development of finer-grained sediment, culminating in what could be interpreted as a 'micritic core' with cavities and a mud-adapted fauna. A peculiar facies made of sheet-like chaetetid sponges alternating with calcite-filled cavities is also developed. The facies occupying most of the volume of the reefs is made of stromatoporoid framestone and boundstone passing laterally to accumulations of stromatoporoid, coral and crinoid debris. Massive stromatoporoids, large colonies of *Heliolites* and *Cyathophyllum* indicating shallow agitated waters form the top of the bioherm. With this late facies is associated the most diverse fauna. The faunal diversity culminates in that part of reef with the development of many corals, stromatoporoids, brachiopods. The shallowing-upwards trend recorded in the facies culminated with the emersion of the top of the bioherm, triggering its demise. The modest size and limited ecological development of the reefs is interpreted as a consequence of the lack of accommodation space.