

ROLLING REEFS IN THE LATE DEVONIAN OF BELGIUM

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The upper member of the Aisemont Formation (Upper Frasnian, S Belgium) yielded a surprisingly diverse assemblage of macroids varying in size, shape and composition, from simplest microbial oncoid to complex, polytaxic circumrotatory macroid. Besides simple oncoids dominated by either by microbial coating or skeletal organisms (e.g. bryozoan), occur composite oncoids that involve both skeletal and microbial organisms. However, polytaxic circumrotatory (free-rolling) macroids, produced by diverse organisms, usually in sequential coating formed small (up to 12 cm in diameter) rolling reefs. The later occasionally became immobile and grew as small coverstone reefs. The dominant (in frequency and volume) encrusting organisms are the tabulate corals and stromatoporoids that both possessed the ability to cement themselves to the substrate. Microbes also contributed to the formation of macroids though the volume they occupy is relatively low. Geopetal sediment filling of cavities displays various directions indicating the rolling of the objects during their formations. Annual rolling or tilting may be related to seasonal storms. Skeletal invertebrates singly grew during the good season and partly or totally died and was colonized by microbes during the bad season. The surface of the macroid was subsequently re-colonized by skeletal organisms at the good season when suitable conditions resettled. Estimating the age of these object has been attempted by counting the number of successive generations of encrusting organisms and growth bands within colonies. Circumrotatory macroids were in average 8 years old but some reached 12 years. Domal objects were more stable and durable as some lived up to 30 years. Despite environmental conditions seemingly suitable for reef development, no large scale reef settled during the time of deposition of the upper member of the Aisemont Formation. This lack seems to be related to the progressive degradation of the environment due to the ongoing Late Frasnian biocrises (Kellwasser events).