Ber. Inst. Geol. Paläont. K.-F.-Univ. Graz	ISSN 1608-8166	Volume 7	Graz 2003

DISSEPIMENTS, PRESEPIMENTS AND MARGINARIA IN THE RUGOSA (CNIDARIA, ZOANTHARIA)

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Dissepiments are formed the same way in both Rugosa and Scleractinia, but in rugosans are restricted (by definition) to a peripheral position, in a marginarium or dissepimentarium. Dissepiments in all modern and fossil corals are formed by centripetal growth of carbonate crystals to a central junction line, with the formation of their primary layer taking only 3 or 4 days to complete. Modern Scleractinia form dissepiments by crystal growth out of the thickening layer of septa into the first-formed layer of the dissepiment. Formation of series of dissepiments may have resulted from discontinuous retraction due to tensional stretching of basal polypal flesh due to elongation of septa, as supposed by Ogilvie and by Hill, or by fluid lifting from beneath, as proposed by Wedekind and by Wells. Presepiments, formed prior to septa in many rugosan genera, and the lack of septa in cystimorph corals, support the latter, the Wedekind Hypothesis of Wells. Names have been given to dissepiments in fossil corals based on their shape, continuity, position or timing of formation; most are not pertinent to the paleobiology of the Rugosa. The marginarium provided a buffer zone between vital parts of the rugosan polyp and its physical environment, and contain normal dissepiments, lonsdaleoid presepiments or may lack dissepiments. Rugosans during times of peak diversity (*e.g.* Devonian) tend to have normal dissepiments in a broad marginarium. Rugosans lacking a dissepimentarium are small, restricted to deeper water and referred to the „*Cyathaxonia* fauna" of Hill. Following several times of crisis in the Paleozoic (Late Ordovician, Late Devonian) non-dissepimented corals provided precursors for lonsdaleoid genera with presepiments, which in turn gave way to faunas with normal dissepiments. The most common function of dissepiments in the Rugosa was to provide support for the polyp base, as in the Scleractinia. The dissepimentarium of the Rugosa on soft substrates is commonly expanded for support, while on hard substrates the dissepimentium commonly forms a pedestal and replicates hard objects or surfaces. Another function of dissepiments apparently was to provide anchoring for corallites in soft muddy sediments. Expansion and contraction of the marginarium reflects marked ecologic change, but may occur without modification of the shape or diameter of the tabularium, suggesting that the tabularium was the critical area of polyp anatomy, and that the marginal area could alter without permanent damage to polyps. Spreading of the marginarium in rugosans may have benefitted the coral by expansion of marginal ciliated ectoderm for cleansing and feeding functions, but it is not supposed that these were phototrophic or influenced by symbiont photosynthesis.