

1965

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Recommended Citation

Freeman, Tom (1965) "Paleozoic Analogues of Recent Carbonates," *Journal of the Arkansas Academy of Science*: Vol. 19 , Article 16.
Available at: <http://scholarworks.uark.edu/jaas/vol19/iss1/16>

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PALEOZOIC ANALOGUES OF RECENT CARBONATES

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Analogues of carbonate sediments accumulating today can be found in Paleozoic limestones of northern Arkansas. Examples are drawn from the Joachim Limestone (Ordovician), the Pitkin Limestone (Mississippian), the Plattin Limestone (Ordovician), and the Fayetteville Shale (Mississippian).

Logan, *et al.* (1964) proposed a classification based on the arrangement of the basic geometric units (hemispheroids and spheroids) from which common stromatolites and oncolites are built. Their type LLH-C/LLH-C, exemplified by algal mats in Western Australian salinas, occurs in the Joachim Limestone. More commonly however, Joachim stromatolites are of the SH-V/LLH-C variety, and reflect interarea scour by tidal currents. Both types attest to an intertidal environment of growth.

SS-I/LLH-C structures occur in the Pitkin Limestone. These oncolites are analogous to recent ones in south Florida (Ginsburg, 1960), and suggest water depths on the order of 0'-8'. The particular mode, "I", reflects infrequent movement of the oncolites in moderately agitated water.

Shinn and Ginsburg (1964) described the environment of Recent dolomite formation in the Bahamas and Florida Keys. The sites of formation are inches above mean high tide level and are characterized by (1) laminated sediment, (2) mud cracks, (3) stromatolites, and (4) burrows. "Partly dolomitized gastropod shells and pellets show that the dolomite is a penecontemporaneous replacement of calcium carbonate" (Shinn and Ginsburg, 1964). The Plattin Limestone of northern Arkansas is replete with (1) laminated rock, and (2) mud cracks, and locally displays (3) stromatolites and (4) burrows. Dolomite in the Plattin has been discovered through X-ray, petrographic, and staining techniques. Though not volumetrically important, except within local beds, this dolomite is believed to reflect conditions analogous to those described from the Recent by Shinn and Ginsburg (1964).

Illing (1954) described a variety of sand-size grains from the Bahamas which have acquired the all-inclusive term "Bahamite". Several of these grain types occur in limestone in the upper part of the Fayetteville Shale near Oxley, Arkansas. These include (1) ooids, (2) pellets, (3) grapestones, and (4) encrusted lumps. All these suggest waters supersaturated with respect to CaCO_3 , and the lime "mud" of the upper Fayetteville is probably a direct precipitate from sea water. In addition to the "Bahamite", crinoids and a variety of foraminifers occur in this limestone, and they serve as nuclei for the ooids. The foraminifers include *Endothyra* sp., *Apterrinella* sp., *Globivalvulina* sp., *Calcitornella* sp., and *Paleotextularia* sp.

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