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Thrombolite Buildups in the Middle Jurassic Piper and Gypsum Spring Formations, Bighorn Basin, Wyoming

Microbial (thrombolite) buildups have been discovered in the Middle Jurassic in the Bighorn Basin, Wyoming. The Middle Jurassic in the Bighorn Basin is comprised of the Piper and Gypsum Spring Formations (Bajocian to Bathonian) and the Rierdon and "lower" Sundance Formations (Bathonian to Callovian). Laminated mudstones of probable microbial origin have been observed throughout the Piper and Gypsum Spring Formations by previous investigators. This is the first known report of thrombolite buildups in the Middle Jurassic of the Western Interior. The thrombolites occur in a unit of interbedded carbonate mudstone and fossiliferous/oolitic packstone to grainstone, which is the probable equivalent to the middle Firemoon Limestone Member of the Piper Formation in Montana. The observed buildups are approximately 3 meters across and at least 1 meter thick. Each buildup is composed of circular 'heads' of layered microbialite with an internal clotted texture (i.e. thrombolite). Individual heads are approximately 0.5 meters in diameter and 0.25 meters thick. Initial environmental interpretations of these microbial buildups suggest that they developed in shallow water (<1 meter water depth) which was possibly brackish. Evidence for shallow water include (1) the presence of dinosaur tracks on neighboring micritic laminae (probably also microbial in origin) and (2) characteristic benthic fauna.