XXXV. SOME NEW FOSSIL ALGAL HORIZONS IN THE ARBUCKLE MOUNTAINS

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In 1884, James Hall found in the town of Greenfield, Saratoga County, New York, some peculiar concentric circular structures in the Upper Cambrian limestone which he recognized as organic, but did not know where to place them, so he gave them the name of *"Cryptozoon proliferum,"* the generic name meaning hidden animal life and the specific name indicating their abundance.

He[1] described them as follows: In the town of Greenfield, Saratoga County there occurs a bed of limestone which presents a very remarkable appearance, the surface being nearly covered by closely arranged circular or subcircular discs which are made up of concentric laminae, closely resembling in general aspects the structure of *Stomatopora.* It very often happens that within these larger discs there occur two or more smaller ones, each with its own concentric structure and exterior limitation, and appearing as if budding from the parent mass. A further examination shows that the entire form of these masses is hemispheric or turbinate, with the broadest face exposed upon the upper surface of the limestone layer: that their growth has begun from a point below, and rapidly expanding upwards, has often extended one or two feet in diameter as now shown upon the surface of the limestone bed. At a single exposure on the farm of Mr. Hoyt, the surface of the limestone is covered by these bodies for many rods in extent. The entire area of the cellar beneath the house of Mr. Hoyt is covered by these hemispehic masses with concentric structure. For a distance of one or two miles to the southward the outcrop of this limestone can be traced, and everywhere presenting the same characters in the presence of these masses. Large numbers of specimens of various size have been weathered out and lie scattered over the surface. This fossil has also been found at Little Falls, Herkimer County, New York."

For twenty five or thirty years little further light was thrown upon these forms until Walcott discovered the vast algal deposits of the Belt limestones in the Algonkian of Montana. After study-

[1]Hall, James, Thirty-Sixth Ann. Rept. New York State Mus. Nat. Hist. desc. p. 16, 1884.

ing the numerous genera and species from this and from various Cambrian horizons he recognized *Cryptozoon proliferum* as representing deposits made by one of the blue green algae.

In an exchange of fossils with Lawrence College a specimen of *Cryptozoon proliferum* was sent from the Lower Magnesian limestone of central Wisconsin and some agatized beds from the base of the Lower Magnesian limestone from near New London, Wisconsin, which seems to have a similar structure.

Accordingly it is of considerable interest that a bed near the top of the Arbuckle limestone in the southwestern part of the Arbuckle Mountains contains numerous specimens of this or a closely allied species. (See figures 1 and 2.) The bed containing them extends for several miles along the strike of the rocks along the Arbuckle front. At this horizon the specimens seem pretty definitely restricted to a single bed and the bed occurs a few feet below a peculiarly brecciated limestone. This seems to suggest that the algae lived in moderately shallow water and this seems to concur with evidence as to the shallow water origin of many of the early algae elsewhere. At a level several thousand feet lower in the Arbuckle, some of the same species were found, and just above them a conglomerate bed containing rounded nodules of chert giving evidence that they were shallow water forms at this horizon also.

PLATE V

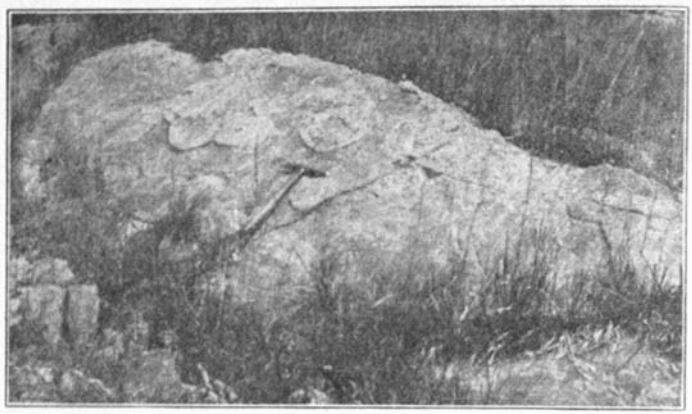

Fig. 1. Cryptozoon proliferum (X 1-10) in bed of Arbuckle limestone, sec. 17, T. 2 S., R. 1 E., Murray Co., Okla.

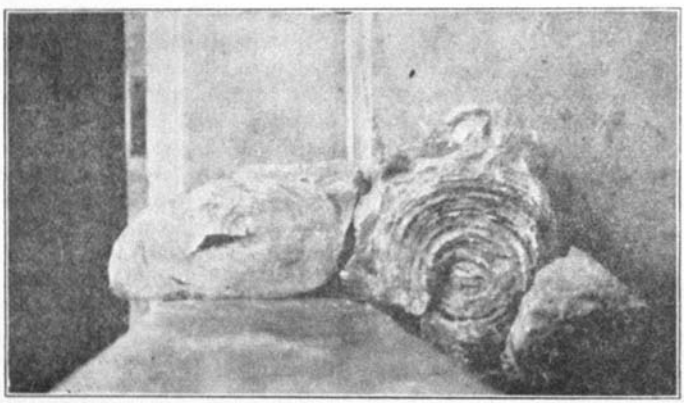

Fig. 2. Cryptozoon proliferum (X ⅛) showing two eroded specimens illustrating the concentric bowl-like structure. Locality as above.