



Geological Sciences



PENNSYLVANIAN CORRELATIONS IN EASTERN
OKLAHOMA

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The boundary between the Des Moines and Missouri series has been known in the northern Mid-Continent for many years, and paleontologists

have long recognized that the genera *Mesolobus* (*Chonetes mesolobus*) and *Prismopora* do not range higher. Only recently, however, has the nature and importance of this boundary in Oklahoma been recognized.

The presence of both *Mesolobus* and *Prismopora* has been noted in the Lenapah limestone in Oklahoma by various workers, and Morgan, in 1924, found that *Mesolobus* does not range above the Holdenville shale, in the vicinity of Ada.

Though the beds overlying the Lenapah horizon have been by no means exhaustively collected, the upper limit of these two diagnostic Des Moines genera in eastern Oklahoma is pretty well established.

The Geologic map of Oklahoma indicates that the outcrop of the Lenapah limestone terminates in the vicinity of Nowata. Ohern* believed that the Lenapah ". . . is replaced by the Dawson coal . . ." which has been traced from the vicinity of Nowata to south of Mounds. In the vicinity of Tulsa, 150 ft. below the Dawson coal, occurs a coquinoïd limestone known by the hitherto unpublished name of "Eleventh Street" limestone—a name suggested by F. C. Greene—which contains *Mesolobus* and *Prismopora*, and is underlain by shale containing a series of thin, platy limestones. The entire series comprises a section some 60 ft. thick.

This series may be traced southward to the latitude of Mounds and Beggs, and east of the former town, a similar section, 25 ft. thick, is developed above the Eleventh Street, and separated from it by a sandstone which is erroneously shown on the State map as Seminole. Southward the limestones disappear, while the sandstone continues and seems to lie at the same position as one found in the middle of the Holdenville shale, still farther south. Just north of Nuyaka, *Mesolobus* occurs in the upper 10 ft. of the Holdenville shale. From Tulsa northward, the Eleventh Street limestone is found east of the Municipal Airport, and on Highway 20, 3 mi. south and 4¼ mi. east of Collinsville. Between Oologah and Talala, thin, platy limestones occur, and similar beds have been noted beneath the Lenapah in its southern-most exposures, 2½ mi. north of Talala. These platy limestones, though discontinuous, are thought to mark the same zone, and since they occur beneath both the Eleventh Street and Lenapah limestone, form part of the basis for correlating these beds.

Seminole Formation. In south-central Oklahoma, the Holdenville shale is succeeded by the Seminole sandstone, described by Taff as the Seminole conglomerate. In one locality in the Stonewall quadrangle, Morgan observed the contact to be unconformable.

The mapping of the Seminole shown on the State map is taken as correct as far north as Beggs, but is in error to the north. From Mounds to Talala, the Seminole is composed of two sandstone members, separated by a shale which contains the Dawson coal, and these units are well shown in the vicinity of Tulsa and Collinsville.

Between Oologah and Nowata, the lower sandstone and most of the middle shale is overlapped and disappears. Three miles north of Talala the Dawson coal is less than 10 ft. above the Lenapah limestone, while west of Nowata the Dawson coal is absent, and the upper sandstone member of the Seminole occurs 10-15 ft. above the Lenapah, continuing in this position to the Kansas line. This bed is mapped by the Kansas Geological Survey as the base of the Missouri series.

While these conclusions are based on incomplete data, and the foregoing remarks are to be considered in the nature of a progress report only, they point to the presence of an important physical break—unconformity

*D. W. Ohern, footnote to "A contribution to the Geology of Eastern Osage County," by F. C. Greene, Bull. Amer. Assoc. Petro. Geol. 2, 122 (1918).

and overlap, at the Des Moines-Missouri contact in Oklahoma, and reconcile nicely with the faunal break already noted.

