

The Upper Limit of the Seminole Formation in Oklahoma

MALCOLM C. OAKES, Norman

The Seminole formation, at the base of the Des Moines series, of Pennsylvanian age, rests unconformably on eroded rocks of the Missouri series, also of Pennsylvanian age, and extends from the Arbuckle Mountains in south-central Oklahoma northward into the state of Kansas.

The Seminole formation was named by Taff (4), in the Coalgate Folio, from exposures in the southeast part of the Seminole Nation, Indian Territory, now Seminole County, Oklahoma. Taff described the lower part of the formation and defined its lower limit. Its upper limit is outside the area covered by the Coalgate folio, and Taff did not define it, although he did say that the Seminole formation is about 150 feet thick in the vicinity of the northwest corner of the Coalgate quadrangle.

When Morgan (2) mapped the Stonewall quadrangle, which adjoins the Coalgate quadrangle on the west, he found a limestone bed about one foot thick which he named the DeNay limestone. He found also that the DeNay is about 150 feet above the base of the Seminole formation, in the northeast corner of the Stonewall quadrangle. Morgan, therefore, defined the upper limit of the Seminole formation as the base of the DeNay limestone.

By 1937 the base of the Seminole formation had been mapped northward to the Kansas-Oklahoma line, by the combined efforts of various geologists. However, the upper limit had not been mapped north of the Stonewall quadrangle. In 1937 Moore, Newell, Dott, and Borden (1) designated the base of the Checkerboard limestone, which is commonly about 2.5 feet thick, as the top of the Seminole formation in northeast Oklahoma, in the belief that the Checkerboard was, at least approximately, equivalent to the DeNay limestone. They recognized, however, that the equivalence of the Checkerboard and the DeNay had not been established.

The stratigraphic relations of the Checkerboard and DeNay limestones have been greatly clarified in recent years. The writer has confirmed earlier mapping of the Checkerboard limestone southward to Okfuskee County. Also, three graduate students of the University of Oklahoma, Ries (3), Weaver, (6) and Tanner (5) have mapped all outcrops in detail in Okfuskee County, Hughes County, and Seminole County, respectively, and discussed them in their doctoral dissertations.

The choice of the base of the Checkerboard limestone as the upper limit of the Seminole formation in northeast Oklahoma was, indeed, a fortunate one. True, outcrops of the Checkerboard and DeNay limestones are not continuous. Probably the two limestones are not even continuous underground, to the west. However, the Checkerboard and DeNay limestones do occupy substantially the same stratigraphic position. Both are only a few tens of feet below a sandstone. This sandstone has been traced from exposures near Okemah, Okfuskee County, where its relation to unquestioned Checkerboard is clear, to outcrops in western Hughes County and eastern Seminole County, where its relation to unquestioned DeNay is similar and equally clear.

LITERATURE CITED

1. MOORE, R. C., N. D. NEWELL, R. H. DOTT, AND J. L. BORDEN. 1937. Definition and classification of the Missouri subseries of the Pennsylvanian series in northeastern Oklahoma. Kansas Geological Society. Guide Book Eleventh Annual Field Conference.

2. MORGAN, GEORGE D. 1922. Geology of the Stonewall quadrangle, Oklahoma. Bureau of Geology, Bull. No. 2.
 3. RIES, EDWARD RICHARD. 1951. The geology of Okfuskee County, Oklahoma. Unpublished dissertation, University of Oklahoma, Norman.
 4. TAFF, J. A. 1901. Geologic atlas, Coalgate Folio (No.74), U. S. Geol. Survey.
 5. TANNER, WM. F. 1953. The geology of Seminole County, Oklahoma. Unpublished Dissertation, University of Oklahoma, Norman.
 6. WEAVER, OSCAR D. 1952. The geology of Hughes County, Oklahoma. Unpublished Dissertation, University of Oklahoma, Norman.
-