

XXX. PRELIMINARY REPORT ON THE COMANCHEAN OF NORTHWESTERN OKLAHOMA

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Appearing at the surface in widely separated localities of Woods, Harper, and Woodward counties of northwestern Oklahoma there are erosional remnants, or outliers of the Comanchean system which from their contained fossils appear to represent some portions of the Comanchean series of Kansas, and also of the Comanchean system of Texas.

A resume of the literature with reference to the Comanchean outcrops of the area is obtained from the published records of E. D. Cope, R. T. Hill, and T. W. Vaughan, each of whom has made one or more brief visits to this area.

In 1893, Cope¹ noted the presence of Comanchean beds, on an elevation or divide between Wolf and Beaver creeks, a short distance west of the old Federal post of Camp Supp'y. From the beds at this locality, Cope collected and later published a list of some eight or nine fossils. Then, the next year, R. T. Hill,² accompanied by two assistants, C. N. Gould and G. B. Shattuck, set out to study the northward extension-into-Kansas-equivalents of the Comanchean series, as had been announced, previously, by F. W. Cragin³. Hill went first to the Belvidere beds, which appear at the surface, just south of Belvidere, Kansas. Then from that locality, Hill continued his investigations south-

¹Cope, E. D.; *Proceed. Acad. Nat. Sci.* for 1894, pp. 63-68.

²Hill, R. T.; *On the Outlying Areas of the Comanche Series of Kansas, Oklahoma, and New Mexico*; *Am. Jour. Sci.*, 3rd Ser., Vol. L, pp. 205-234.

³Cragin, F. W.; *Contributions to the Paleontology of the Plains*: *Bull. Washburn Coll. Lab. Nat. Hist.*, vol. II, No. 16, pp. 65-66. 1889.

ward, to the Camp Supply beds in Oklahoma, where he collected and later published a list of fossils from the Comanchean beds or outcrops at that place. More than a year later, 1896, T. W. Vaughan⁴ made a reconnaissance study of the Comanchean outcrops of this area. Vaughan extended his reconnaissance from the outcrops of the Comanchean at Avilla Hill in Southern Comanche County, Kansas, southward to the shell breccia and shale beds, of the Comanchean, in the extreme northern part of Woods County, Oklahoma, which locality is twelve miles or more from the outcrops at Avilla Hill. From the northern Woods County beds, Vaughan continued southwest to the Camp Supply beds, where he also collected a list of fossils, which he later used in revising Cope's list from this locality. From the Camp Supply beds, Vaughan went southeast to the Comanchean outcrops on the Woodward County line, eight miles northwest of Taloga, where he again made a collection of fossils. Vaughan⁵ published the results of this reconnaissance in 1897.

The outcrops of the Comanchean in northwestern Oklahoma, may be said, according to the locations as given by Cope, Hill, and Vaughan, to form a semi-circular series of outcrops, beginning with the shale and shell breccia beds in northern Woods County, thence to the Camp Supply beds, southwestward, and from that place, to the outcrops near Taloga, southeast of the Camp Supply beds. However, this semi-circular arrangement for the outcrops of the area may now be modified to include a recently observed erosional remnant of Comanchean outcrop, which occurs at a point one mile west of Quinlan, in eastern Woodward County. This remnant, of which there is but little in place, extends the line of known Comanchean outcrops, eastward for a distance of more than twenty miles. The Quinlan remnant lies on a north-and-south alignment with the shell breccia and shale beds of northern Woods County, and the Comanchean beds near Taloga. This new line of outcrop by no means marks the eastern limit of deposition, or of beds laid down by the Comanchean seas in their northward extensions. Well preserved fossils in great numbers occur in the stream beds of many of the streams of this area. Indeed, at a locality ten miles northwest of Alva, on an elevation high above the Salt Fork canyons there occurs a considerable bed of Gryphaeas in a state of preservation, such

⁴Vaughan, T. W.; Additional Notes on the Outlying Areas in Kansas, Oklahoma; Am. Jour. Sci. Ser., Vol. IV. pp. 43-50. 1897.

⁵Vaughan, T. W., loc. cit.

as to show that transportation for any great distance does not account for the presence of the Gryphaeas in this bed, at least. It is believed that the presence of well-preserved fossils of such forms as *Gryphaea navia*, Hall, *Gryphaea corrugata*, Say, and *Exogyra texana*, Roemer, which occur in many stream beds, and at other places, throughout this area, is best explained by the significance of outliers, such as, for example, the remnant at Quinlan. It is certain that fossils in fair degrees of preservation are evidences of the existence of former Comanchean, not far removed from the occurrence of the fossils.

The Comanchean remnant, or beds at Quinlan may be described as a highly fossiliferous lime-and-shell agglomerate, white to yellow in color, and from ten to fifteen inches in thickness. A thin bed of dark, thinly-laminated shale occurs at the base of the agglomerate. This dark shale is more or less intermixed by erosion with the agglomerate, itself. The entire mass caps a small elevation that stands in an erosional depression of the Whitehorse sandstone.

From the Quinlan locality, fifteen different fossils were collected and from this number twelve species identified. The list of these fossils is identical with the previously published lists of Cope⁶, Hill⁷, and Vaughan⁸, from localities within this area, except that the Quinlan list contains two or three additional species, which do not appear in the previous lists.

On the basis of paleontology, it is interesting to note the relationship of the Quinlan beds to certain portions of the Texas section of the Comanchean. A table to show this faunal relationship for both the Texas section and for the Kansas section of the Comanchean is given:

Correlation Table for Fossils collected at the Quinlan beds.

Species	Texas Section ⁶	Kansas Section ⁷
<i>Cyprimeria texana</i> , Roemer.	Middle third of the Goodland L. S. A. smaller species ranges upwards into Kiamitia clays.	Reported from Kiowa shales, by F. W. Cragin.

⁶Cope, E. D.; loc. cit.

⁷Hill, R. T.; loc. cit.

⁸Vaughan, T. W.; loc. cit.

Exogyra texana, Roemer.	Goodland L. S. Abundant in upper Walnut. Rare in Kiamitia clays.	Champion shell bed, and upwards in Kiowa shales.
Gryphaea navia, Hall.	Kiamitia Clays, Only.	Upper Kiowa shale, in L. S. beds.
Protocardia texana, Conrad.	Occasional in Good- land L. S., and Washita. Rare in Kiamitia and Duck Creek formations	Champion shell beds and higher, to Men- tor beds.
Gryphaea corrugata, Conrad.	Kiamitia and Duck Creek formations.	Lime zones of upper Kiowa shales.
Pholadomya sancti- sabae, Roemer. P. belviderensis, Twenhofel.	Occasional in Good- land L. S. Abundant in Kiamitia.	Champion shell bed. Ranges higher.
Trigonia emoryi, Conrad.	Ranges from upper Frederickburg, to en- tire Washita.	Lime beds of Kiowa shale.
Cardium Kansas- ense, Meek.	Washita division. Reported by Cragin ¹¹ .	Champion shell beds and Kiowa shales.
Carditi belvideren- sis, Cragin. C. mudgei, Cragin.	Washita division. Reported by Cragin ¹¹ .	Champion shell bed.
turritella seriati- granulata. Roemer. (may be, var. bel- viderii. Cragin	Washita division According to Hill ¹² .	Throughout Kiowa shales.
Cucu'aea recedens, Cragin. C. terminalis, var. recedens, Cragin.		Abundant, Cham- pion shell beds. Ranges higher
Tylostoma elevata, Shumard	Upper Fredericks- burgs. According to Twenhofel ¹³ .	Champion shell bed and Kiowa shales.

The following types were collected, but identification was not complete:

Schloenbachia sp.

Ostrea sp.

Two pelecypod specimens.

⁹Adkins, W. S. and Winton, W. M.; Paleontological Correlation of the Fredericksburg and Washita Formations in North Texas. Bull. 1945, Bu. Ec. Geol., Univ. of Texas. 1919.

¹⁰Twenhofel, W. H.; Geology and Invertebrate Paleontology of the Comanchean and "Dakota" Formations of Kansas. Kansas Geol. Sur., Bull. No. 9, 1924.

¹¹Cragin, F. W.; loc. cit.

¹²Hill, R. T.; loc. cit.