BUREAU OF ECONOMIC GEOLOGY
The University of Texas
Austin, Texas 78712
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Report of Investigations—No. 58

Nomenclature Revision of Basal Cretaceous Rocks Between the Colorado and Red Rivers, Texas

By

W. L. Fisher and Peter U. Rodda

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NOMENCLATURE REVISION OF BASAL CRETACEOUS ROCKS BETWEEN THE COLORADO AND RED RIVERS, TEXAS

W. L. Fisher and Peter U. Rodda

ABSTRACT

Based on need for convenient, small-scale cartographic units, the basal Cretaceous rocks in Texas from Red River to Burnet County and on the Callahan Divide are herein divided into three distinctive lithologic sequences. These are recognized by changes in facies and by the presence or absence of overlying definitive units and include: (1) North-central Texas sequence overlain by the Glen Rose Formation and characterized by siliceous conglomerates and lack of carbonate units (Twin Mountains Formation) (new name); (2) North Texas and West-central Texas sequences extending beyond pinch-out of the Glen Rose Formation with basal and stratigraphically higher clastics included in a single unit (Antlers Formation); (3) Central Texas sequence overlain by Glen Rose Formation but characterized by carbonate units and coarse, locally derived, limestone and dolomite conglomerates (Travis Peak Formation). The outcrop sequence of North-central Texas grades eastward in the subsurface to a basinal sequence overlain by the Glen Rose Formation and divided into (in ascending order) the Hosston, Sligo, Pearsall, and Hensel Formations.

The name Trinity is confusing in its various uses and should be reserved for higher rank units, i. e., Group or Division, where such units are judged necessary and are clearly defined in areal scope as well as vertical sequence.

INTRODUCTION

In a stratigraphic and resource investigation (Fisher and Rodda, in press) of outcropping basal Cretaceous rocks in Texas from the Red River to Mills County and on the Callahan Divide, a revision of nomenclature was indicated. The existing confusing and, in some cases, inappropriate nomenclature is largely the result of (1) inadequate field mapping of rock sequences and facies, (2) marginal character of the basal Cretaceous sequence in outcrop including pinch-out, facies change, and abrupt lateral changes near basement contacts, and (3) wide areas in which much of the section has been removed by erosion.

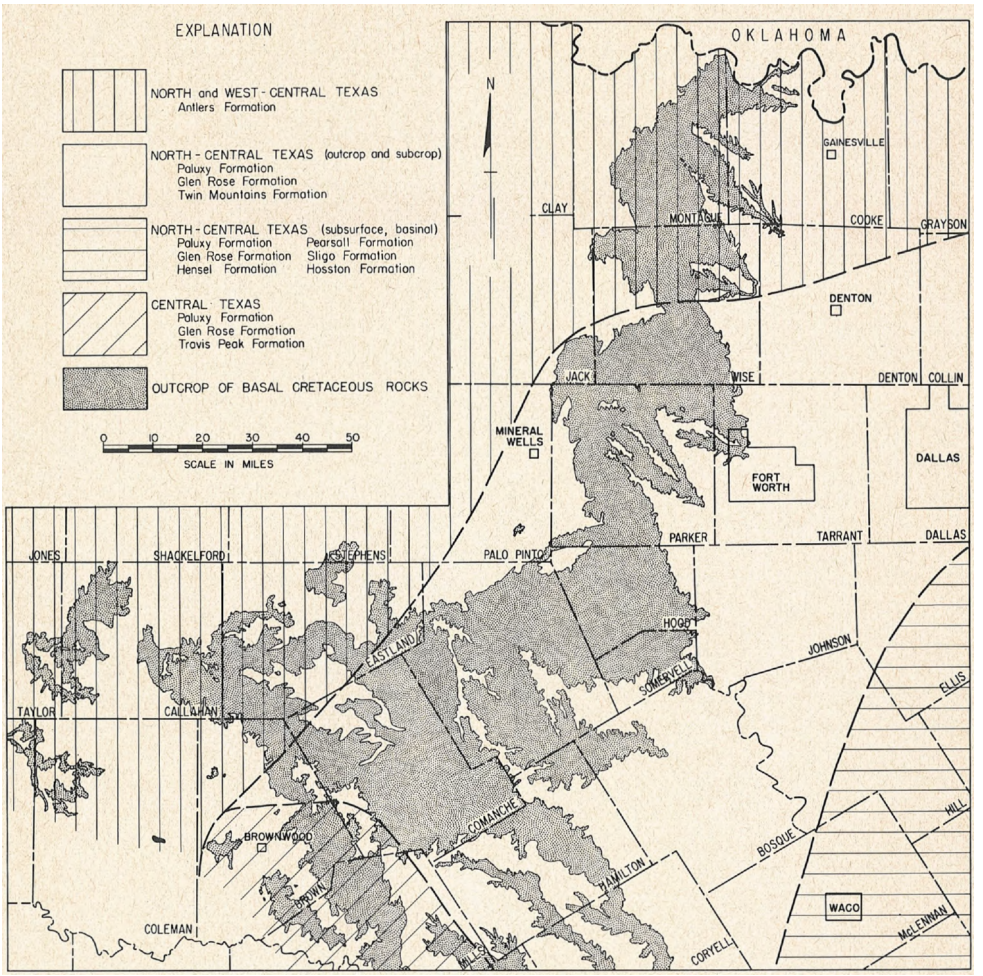

Fig. 1. Areal distribution of main Lower Cretaceous sequences.

In the area of investigation (Pl. I and fig. 1) three lithologically distinct outcrop sequences and one subsurface sequence of basal Cretaceous rocks are delineated. These sequences are defined by changes in facies in outcrop from North-central to Central Texas and from outcrop to subsurface in North-central Texas, and on the pinch-out of definitive overlying units from North-central Texas to North and West-central Texas. The purpose of this paper is to apply a consistent stratigraphic nomenclature to these sequences; one new formation name is proposed.

In North-central Texas (Comanche, Erath, Hood, Parker, Jack, and southern Wise counties) the chiefly arenaceous basal Cretaceous sequence is overlain by westernmost and northernmost extensions of basinal limestones (Glen Rose Formation), which in turn are overlain by another arenaceous sequence (Paluxy Formation). In North Texas (northern Wise, Montague, and western Cooke counties) and in West-central Texas along the Callahan Divide between the Brazos and Colorado Rivers and along the

northern escarpment of the Edwards Plateau (Eastland, Callahan, Coleman, Taylor, Runnels, Nolan, Tom Green, and Coke counties) limestones of the Glen Rose Formation are absent and basal Cretaceous sands and clays are included with stratigraphically higher sands and clays (continuous with the Paluxy Formation of North-central Texas) as a single map unit. In Central Texas along the northern and eastern margins of the Llano Uplift (southern Brown, Mills, Lampasas, Burnet, and Travis counties) the basal Cretaceous sequence is a facies distinct from that farther north. Nomenclature of Lower Cretaceous rocks in this study is shown in table 1. Lower Cretaceous rocks of North-central and West-central Texas were studied recently by Boone (1965).

Table 1. Nomenclature and correlation of Lower Cretaceous rocks of Central, North-central, North, and West-central Texas.

<table>
<tr><th rowspan="2">North-central Texas (subsurface, eastern part)</th><th colspan="2">Central Texas</th><th colspan="3" rowspan="2">North-central Texas</th><th colspan="2" rowspan="2">North Texas (north of Decatur)</th><th colspan="2">West-central Texas (west of 99th M)</th></tr>
<tr><th>Travis County</th><th>Northeast side, Llano Uplift</th><th colspan="2">West-central Texas (west of 99th M)</th></tr>
<tr><td>Fredericksburg formations</td><td>Fredericksburg formations</td><td>Fredericksburg formations</td><td colspan="3">Fredericksburg formations</td><td colspan="2">Fredericksburg formations</td><td colspan="2">Fredericksburg formations</td></tr>
<tr><td rowspan="2">Glen Rose Limestone</td><td rowspan="2">Glen Rose Limestone</td><td>Paluxy Formation</td><td colspan="3">Paluxy Formation</td><td rowspan="3">Antlers Formation</td><td>upper unit</td><td rowspan="3">Antlers Formation</td><td>upper unit</td></tr>
<tr><td>Glen Rose Formation</td><td colspan="3">Glen Rose Formation</td><td>middle unit</td><td>middle unit</td></tr>
<tr><td>Hensel Formation</td><td>Hensel Sand</td><td rowspan="4">Travis Peak Formation</td><td rowspan="4">Twin Mountains Formation</td><td>upper unit</td><td>lower unit</td><td rowspan="3">lower unit</td></tr>
<tr><td rowspan="2">Pearsall Formation</td><td>Cow Creek Limestone</td><td>middle unit</td></tr>
<tr><td>Hammett Shale</td></tr>
<tr><td>Sligo Limestone</td><td rowspan="2">Sycamore Sand</td></tr>
<tr><td>Hosston Formation</td><td>lower unit</td></tr>
</table>

~~~~~~~~~~ Unconformity
———————— Tentative correlation

NORTH-CENTRAL TEXAS

In North-central Texas, northeastward along outcrop from northern Brown and northern Comanche counties to central Wise County (Pl. I), the basal Cretaceous sequence consists chiefly of medium- to coarse-grained sands, red and gray silty clays, and siliceous conglomerates of chert, quartzite, and quartz pebbles. Conglomerates of pebble- and cobble-size limestone and dolomite, calcareous sands and silts, and impure limestones characteristic of the Travis Peak Formation to the south are lacking. Distinct, mappable limestones (Cow Creek) found in basinal facies to the east (subsurface) and in the Colorado River valley to the south are likewise lacking. The basal Cretaceous sequence in North-central Texas ranges in thickness from about 125 to 225 feet, generally increasing to the southeast. It is overlain by marginal facies (limestone and clay) of the Glen Rose Formation.

Rocks exposed along the north side of Twin Mountains in northern Erath County (figs. 2 and 3) are representative of the North-central Texas
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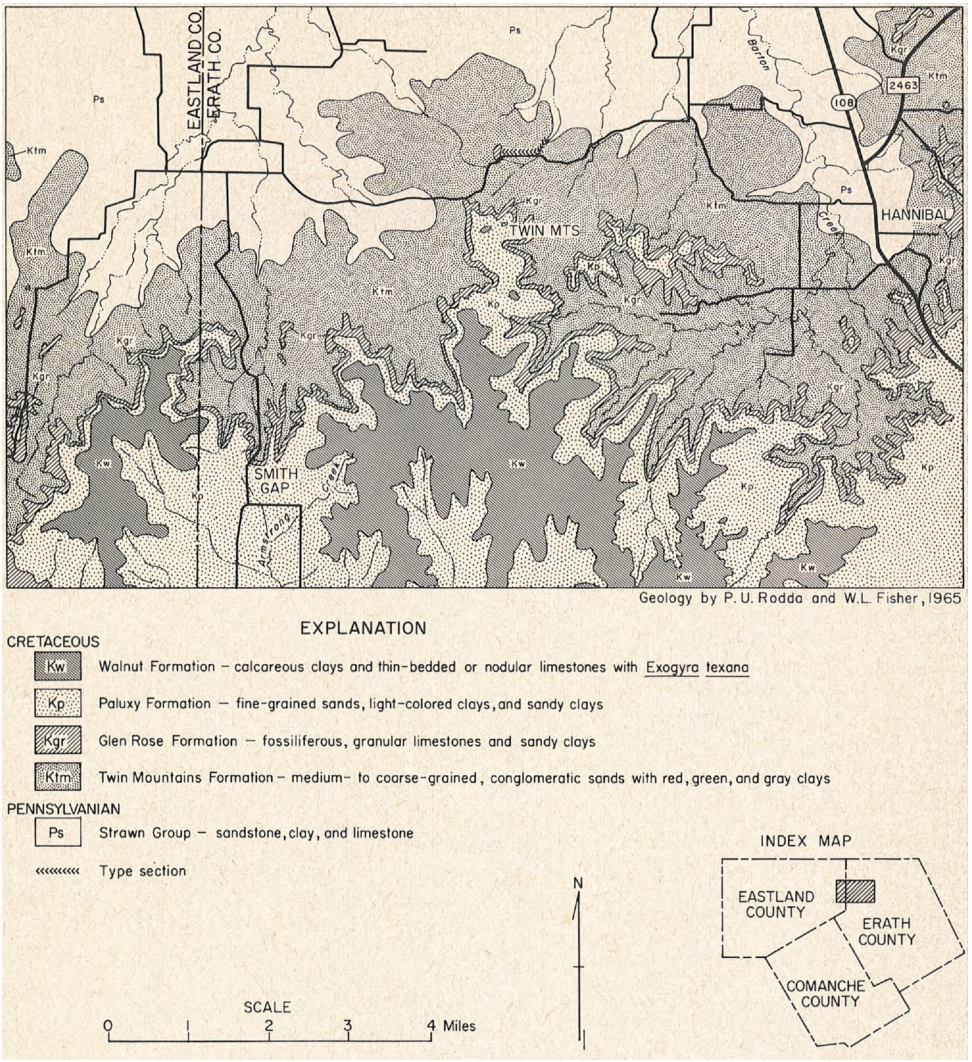

Fig. 2. Geologic map of Twin Mountains Formation type locality, northwestern Erath County, Texas.

basal Cretaceous sequence. The sequence in this area is about 150 feet thick and consists of (in ascending order): (1) medium- to coarse-grained, moderately well-sorted sand; gray silty clay; and siliceous conglomerate of well-rounded pebbles, chiefly chert and quartz; (2) green, maroon, and gray silty clay; (3) fine- to medium-grained, light gray to buff, well-sorted sand, cross-bedded on a moderate to large scale and containing siliceous pebbles similar to those in unit 1; and (4) silty clay, red and gray in the lower part and gray and green in the upper part. The uppermost unit is overlain by limestones of the Glen Rose Formation.

Sand units of the North-central Texas basal Cretaceous sequence probably correlate with sands of the Hensel and Hosston Formations of the

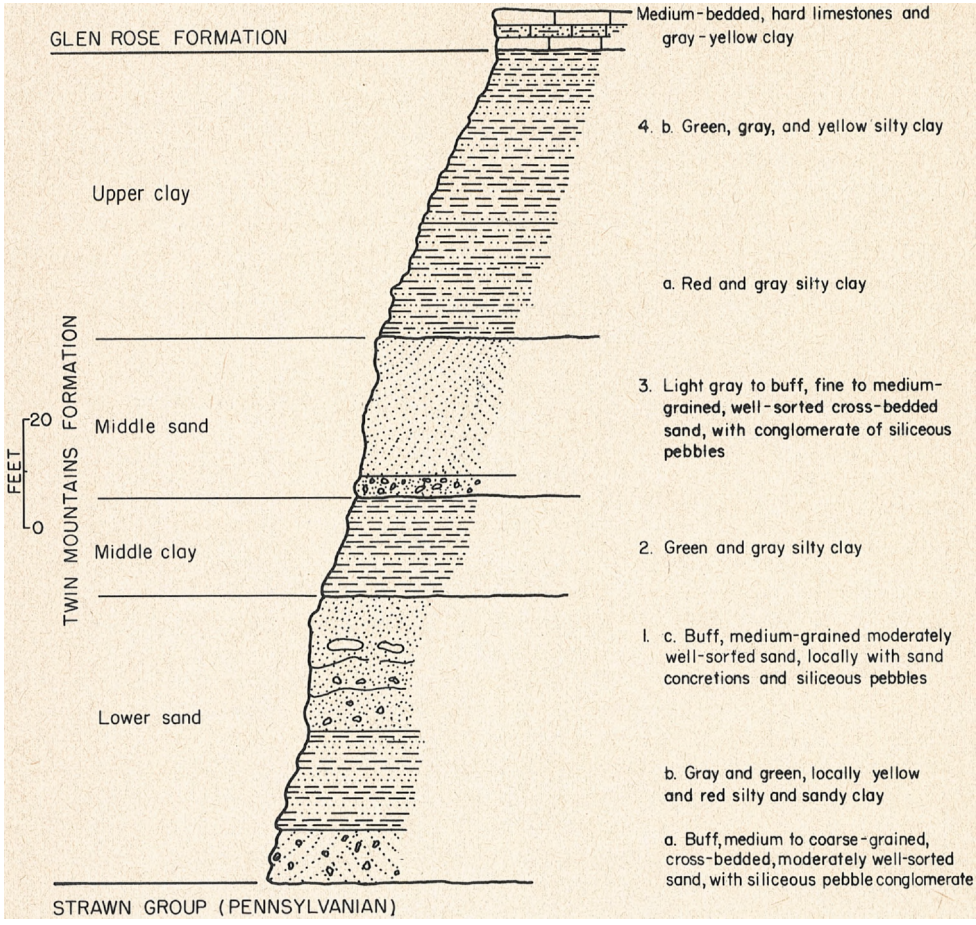

Fig. 3. Diagrammatic section of Twin Mountains Formation (type section), north side of Twin Mountains, Erath County, Texas.

subsurface basinal sequence recognized by Holloway (1961) in McLennan County; middle clay unit in outcrop probably correlates with a limestone and clay interval of the subsurface basinal sequence (Pearsall and Sligo Formations). The upper clay unit probably grades laterally southeastward (down dip) into limestones of the lower part of the Glen Rose Formation.

The basal Cretaceous sequence of North-central Texas commonly is referred to as lower Trinity sands, an informal designation easily confused with various other usages of the term Trinity: (1) Trinity Sand, including undifferentiated Cretaceous sequences, below Fredericksburg limestones and clays, of North Texas and West-central Texas; (2) Trinity Group, including basal Cretaceous sands, overlying limestones of the Glen Rose Formation, as well as, in some reports, sands of the Paluxy Formation; and (3) Trinity Division, a physically defined time-stratigraphic unit,

embracing the basal Cretaceous arenaceous sequence and the Glen Rose Formation. The name Travis Peak from Central Texas has been applied to the basal Cretaceous sequence of North-central Texas (Sidwell, 1947; Leggat, 1957). However, because the facies of North-central Texas is distinct from that of Central Texas, we suggest restriction of Travis Peak Formation to the Central Texas area (Llano facies) in which it was proposed originally, and herein propose the name Twin Mountains Formation for the outcrop and subcrop sequence in North-central Texas. The name is from Twin Mountains, northern Erath County; type locality and section are indicated in figures 2 and 3. The formation is a convenient cartographic unit including basal Cretaceous rocks below the Glen Rose Formation in North-central Texas in both outcrop and subcrop where separate units are not or cannot be recognized, or where it is desirable to designate this sequence as a single unit.

NORTH TEXAS

Limestones of the Glen Rose Formation can be mapped as distinct and relatively persistent beds as far north as central Wise County (Pl. I). Beyond this area they cannot be used to delineate the basal Cretaceous sequence. The medium- to coarse-grained sands with siliceous conglomerates and red and gray clays of the basal Cretaceous sequence can be traced northward to near the Red River, but in the area from central Wise County to the Red River they cannot be mapped conveniently as a distinct unit and so are generally included with stratigraphically higher sands (equivalent to the Paluxy Formation which overlies the Glen Rose Formation in North-central Texas) as a single map unit. The sequence has been referred to as Western (or Upper) Cross Timbers sands, Trinity sands undifferentiated, Trinity sands, and Antlers Sand. This unit forms a gently rolling topography, and complete stratigraphic sections in outcrop are lacking. The basal Cretaceous sequence of North Texas, averaging about 600 feet in thickness, is best shown in subcrop wells (fig. 4). Through northern Wise, southern Cooke, and southern Montague counties, a lower, chiefly sand unit is continuous with the Twin Mountains Formation; a predominantly clay section is in part equivalent to the Glen Rose Formation, and an upper sand unit is in part equivalent to the Paluxy Formation. Sands of the lowest unit are the coarsest grained, those of the middle unit are the finest grained. In northern Cooke and northern Montague counties the entire Cretaceous sequence below the Walnut Formation consists of alternating sands and clays, and subdivisions comparable to those immediately to the south are not apparent. As the basal Cretaceous sequence locally cannot be subdivided or cannot be subdivided conveniently in outcrop, we suggest using the term Antlers Formation (from Pushmataha County, southern Oklahoma (Hill, 1894)) to designate Cretaceous sands and clays below the Walnut Formation and north of the Glen Rose pinch-out in outcrop and subcrop of North Texas. This follows usage of Hill (1901, pp. 131, 192-195) and Adkins (1933, pp. 270, 301, 306-307, 311). The name Antlers has recently been revived and applied to Lower Cretaceous terrigenous sediments in Love County, Oklahoma (Frederickson et al., 1965).

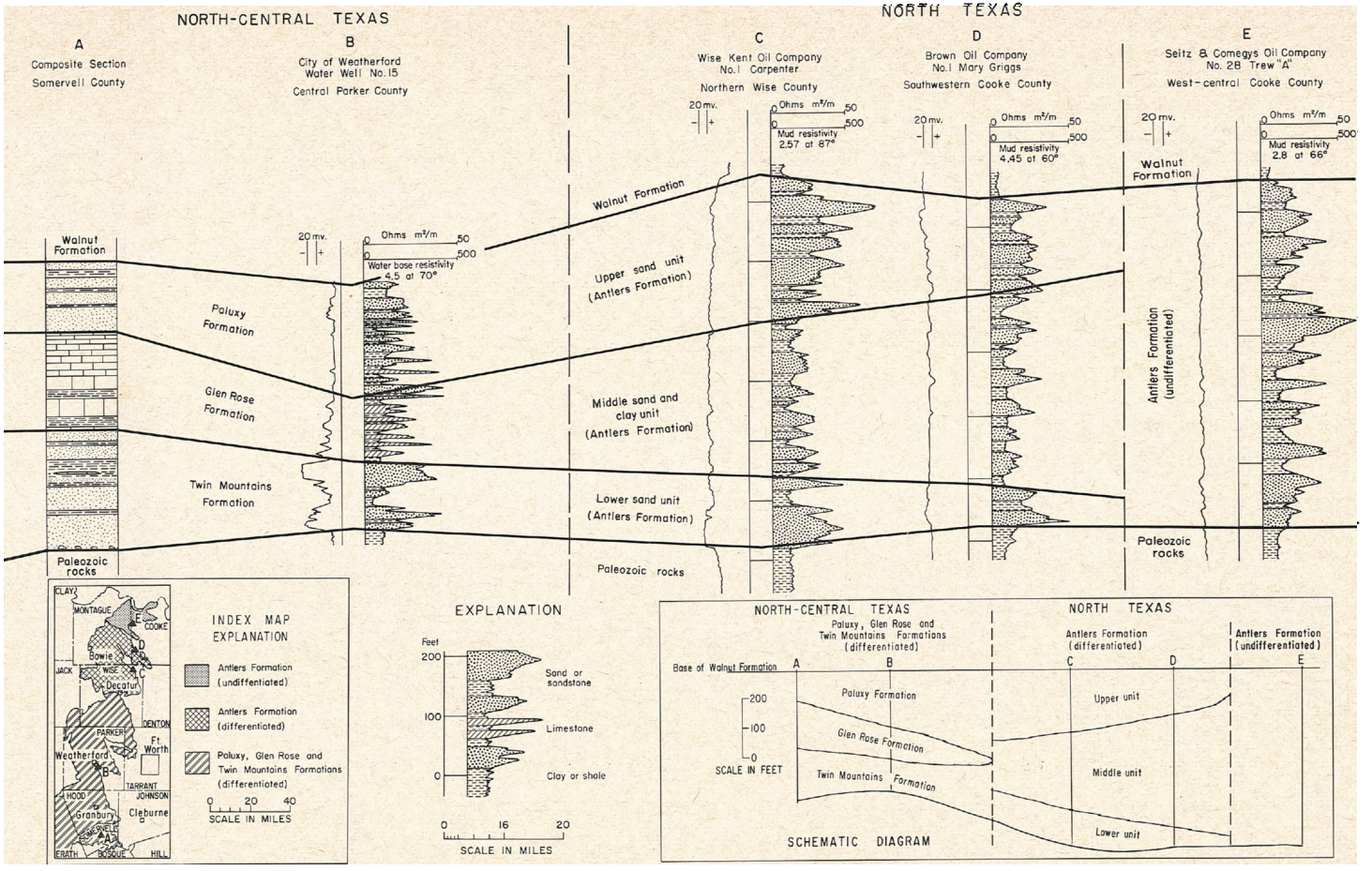

Fig. 4. Stratigraphic relationship of basal Cretaceous sequences of North-central and North Texas.

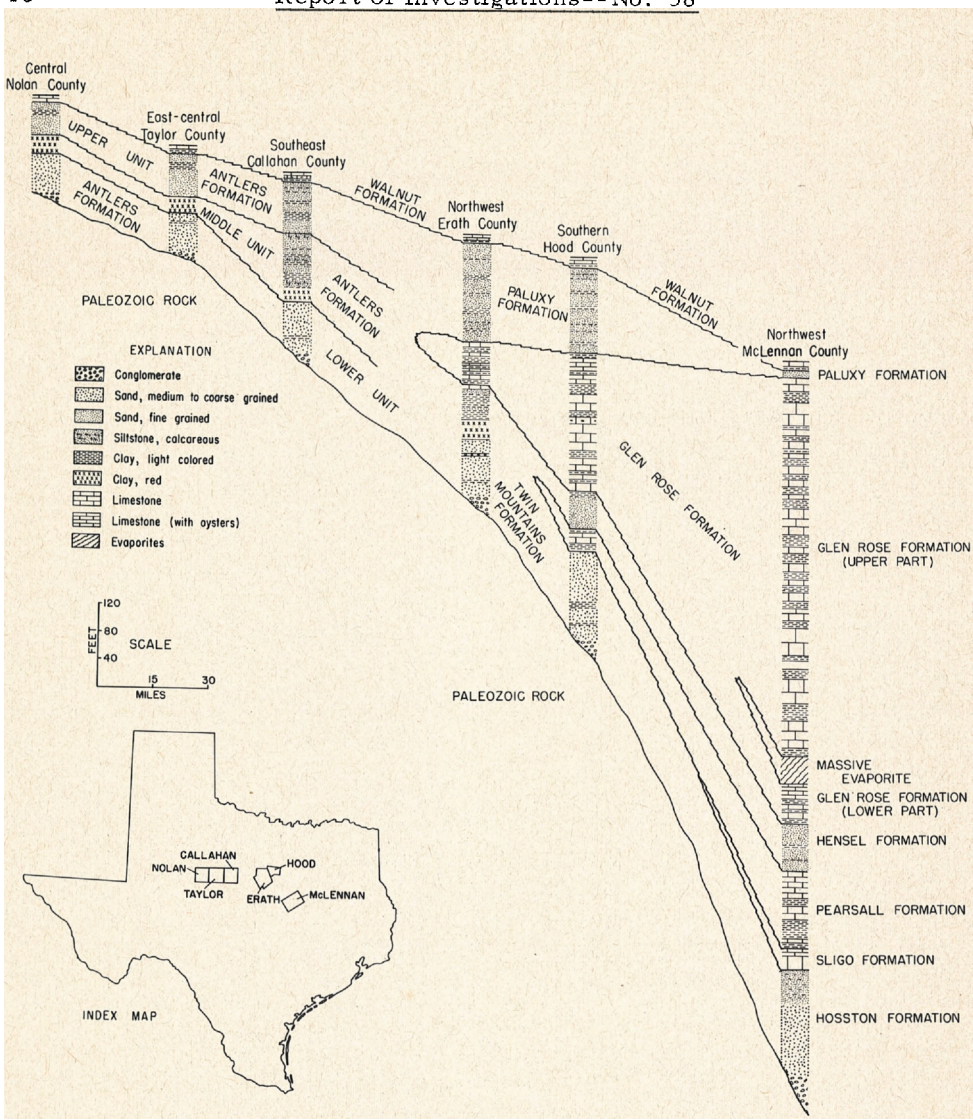

Fig. 5. Stratigraphic relationship of basal Cretaceous sequences of North-central (outcrop and subsurface) and West-central Texas.

WEST-CENTRAL TEXAS

The basal Cretaceous sequence of West-central Texas (chiefly along the Callahan Divide) consists of a basal sand and conglomerate unit, a middle red silt and clay unit, and an upper sand, silt, and sandy clay unit; the Glen Rose Formation is not present. The entire sequence is generally less than 200 feet thick. Unit-for-unit correlation with the Twin Mountains

Formation of North-central Texas is hampered because erosion has removed all but the lowest beds of the basal Cretaceous sequence between the main areas of outcrop of North-central and West-central Texas (Pl. I, diagrammatic cross sections); gross correlations, however, can be made (fig. 5). At Spring Mesa in central Callahan County, one of the easternmost complete sections of the West-central Texas basal Cretaceous sequence, the section consists of (1) a lower unit of medium- to coarse-grained, conglomeratic (siliceous) sand which is probably equivalent to a similar sand section in the Twin Mountains Formation (units 1 and 3 of the type section); (2) a middle unit of red, silty clay, present in most West-central Texas sections and possibly equivalent to extensive red clays of the Twin Mountains Formation (lower part of unit 4 of type section); (3) an upper unit of light-colored sands, clays, and clayey sands, lithologically like the Paluxy Formation of North-central Texas; these sands are generally finer grained than in the lower unit, though they increase in grain size westward. At Spring Mesa two or three prominent beds of calcareous siltstone near the middle of the basal Cretaceous sequence possibly are attenuations of limestones of the Glen Rose Formation. Inferred relations of West-central Texas sections to the Twin Mountains Formation and the basinal sequence of North-central Texas are shown in figure 5.

The basal Cretaceous sequence of West-central Texas has been referred to as basement sands, Trinity sands, Travis Peak Formation, Paluxy Formation, and Fredericksburg Paluxy. We judge the basal Cretaceous sequence of this area to be stratigraphically analogous to that of North Texas with which it was probably once continuous and suggest designation of the West-central sequence similarly as Antlers Formation.

CENTRAL TEXAS

The basal Cretaceous sequence in Travis and southern Burnet counties as originally designated, based on sections described by Taff (1892) and units proposed by Hill (1901, pp. 131, 140-144), included (in ascending order): Sycamore sand, Cow Creek beds, and Hensel sand, collectively designated as the Travis Peak Formation (Hill and Vaughan, 1898, p. 219; Hill, 1890, p. 118) (table 1; fig. 6). Barnes (1948) restricted the name Travis Peak Formation to include the Sycamore and Cow Creek Members and proposed the name Shingle Hills Formation to include the Hensel Sand and Glen Rose Limestone Members (table 2). Lozo and Stricklin (1956) suppressed the name Travis Peak, elevated the included rock units to formation rank, and recognized an additional rock unit (in ascending order): Sycamore Sand, Hammett Shale, Cow Creek Limestone, and Hensel Sand (table 2; fig. 6). On the basis of rock sequence and stratigraphic relations along the eastern side of the Llano Uplift, Lozo and Stricklin proposed a revised concept of the Trinity Division (Hill, 1901) as a physically defined time-stratigraphic unit.

The Sycamore Sand consists of a coarse basal conglomerate of several pre-Cretaceous rock types of the Llano area and grades vertically to a

Table 2. Basal Cretaceous nomenclature, Central Texas area.

Hill (1901)		Barnes (1948)		Lozo and Stricklin (1956)
Glen Rose Formation		Shingle Hills Formation	Glen Rose Member (limestone)	Glen Rose Limestone
Travis Peak Formation	Hensell sands		Hensel Member (sand)	Hensel Sand
	Cow Creek beds	Travis Peak Formation	Cow Creek Member (limestone and clay)	Cow Creek Limestone
				Hammett Shale
	Sycamore sands		Sycamore Member (sand and conglomerate)	Sycamore Sand

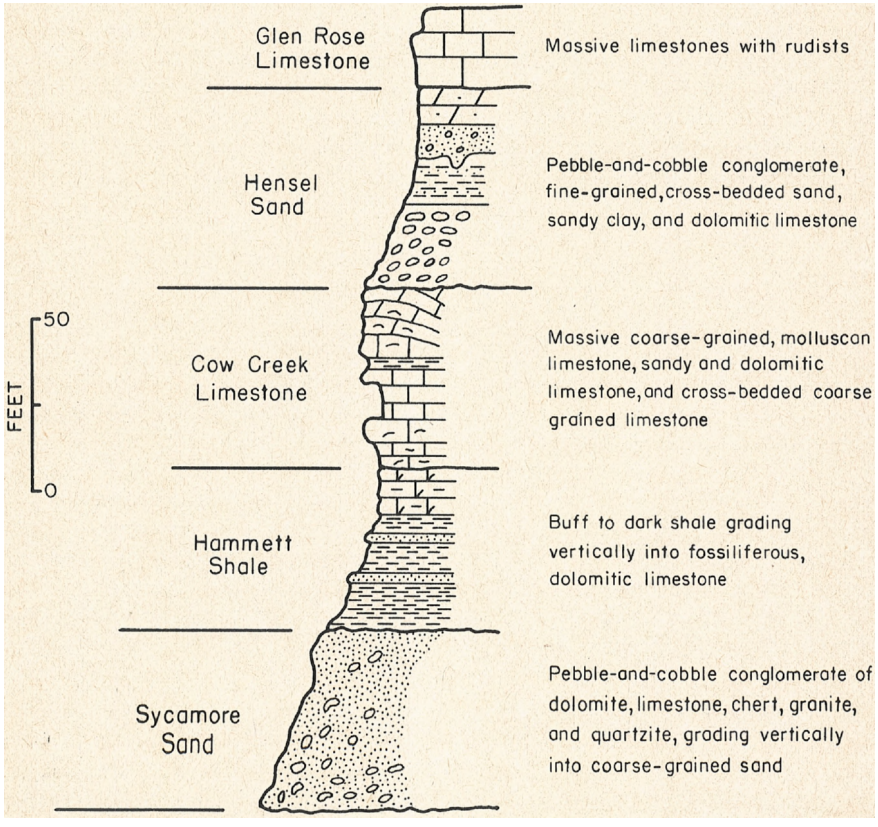

Fig. 6. Diagrammatic section of basal Cretaceous rocks along Colorado River, Central Texas. (Modified from Lozo and Stricklin, 1956.)

mixture of sand, pebbles, silt, and clay. The Sycamore generally is about 100 feet in thickness on outcrop and laps out against the Llano Uplift. The overlying Hammett Shale is about 60 feet of dark to buff shale and includes fossiliferous dolomitic limestone in the upper part. It grades upward and laterally to the Cow Creek Limestone which consists of massive coarse-grained molluscan limestone, sandy and dolomitic limestone, and cross-bedded coarse-grained limestone with rounded shell fragments and quartz sand. The Cow Creek laps out against the Llano Uplift and has a maximum thickness of about 75 feet. The Hensel Sand is a marginal facies of the Glen Rose Formation and consists mostly of cross-bedded sand, silt, clay, and pebble- and cobble-conglomerate. It is disconformable above the Cow Creek Limestone and is about 40 to 100 feet thick. The cyclical onlapping of these units on the southeastern Llano Uplift has been described by Cloud and Barnes (1948, Pl. III), Barnes (1948), and by Lozo and Stricklin (1956). Barnes (1948) mapped Sycamore Sand, Cow Creek Limestone, and Hensel Sand along Lake Travis at the Burnet-Travis County line and mapped (1958) all the basal Cretaceous sequence below the Glen Rose in the vicinity of Burnet as Hensel Sand.

Northward from Burnet, along the northeastern margin of the Llano Uplift through western Lampasas, western Mills, and southern Brown counties, the basal Cretaceous sequence below the Glen Rose Formation consists largely of coarse basal conglomerate overlain by calcareous, conglomeratic sand and silt, sandy and silty limestone, and silty clay. The upper part of this sequence grades vertically and laterally to the Glen Rose Formation (fig. 7). Stratigraphic units recognized in Travis County have not or cannot be delineated. However, throughout the area the basal Cretaceous sequence is a distinct calcareous facies characterized by coarse conglomerates derived from rocks of the Llano Uplift, conglomeratic and calcareous sands and silts, and impure limestones (Damon, 1940, and MS.); deposition was on a land surface of high relief resulting in marked thickness changes from one section to another, and locally the Glen Rose Formation and higher formations lie directly on Paleozoic rocks. For this facies (Pl. I), where separate mappable units have not been recognized or where for cartographic purposes it is desirable to treat the basal Cretaceous sequence below the Glen Rose Formation as a single unit, we suggest the name Travis Peak Formation. Travis Peak is the only existing formal name of formation rank for this distinctive suite of rocks; our usage is based on convenience and availability and no genetic connotation is implied.

LATERAL BOUNDARIES

Lateral boundaries between the undifferentiated basal Cretaceous sequences of West-central and North Texas (Antlers Formation) and the sequence of North-central Texas (Twin Mountains, Glen Rose, and Paluxy Formations) are drawn at the actual and inferred pinch-out of Glen Rose Formation. In North Texas Glen Rose limestones can be mapped as relatively distinct and persistent beds to an area just north of Decatur, central Wise County. For convenience, however, arbitrary stratigraphic cutoff is

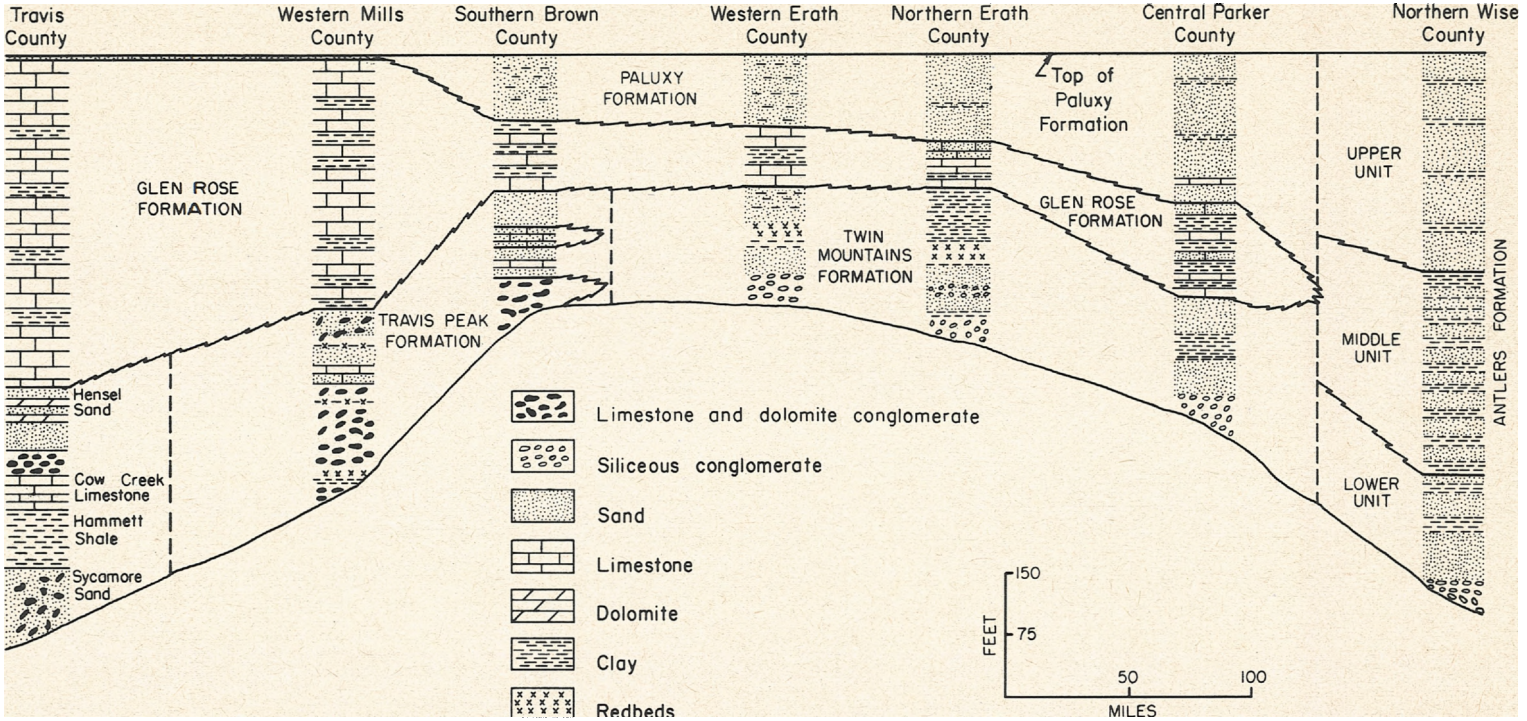

Fig. 7. Stratigraphic relationship of Travis Peak (Central Texas), Twin Mountains (North-central Texas), and Antlers (North Texas) Formations and associated rocks.

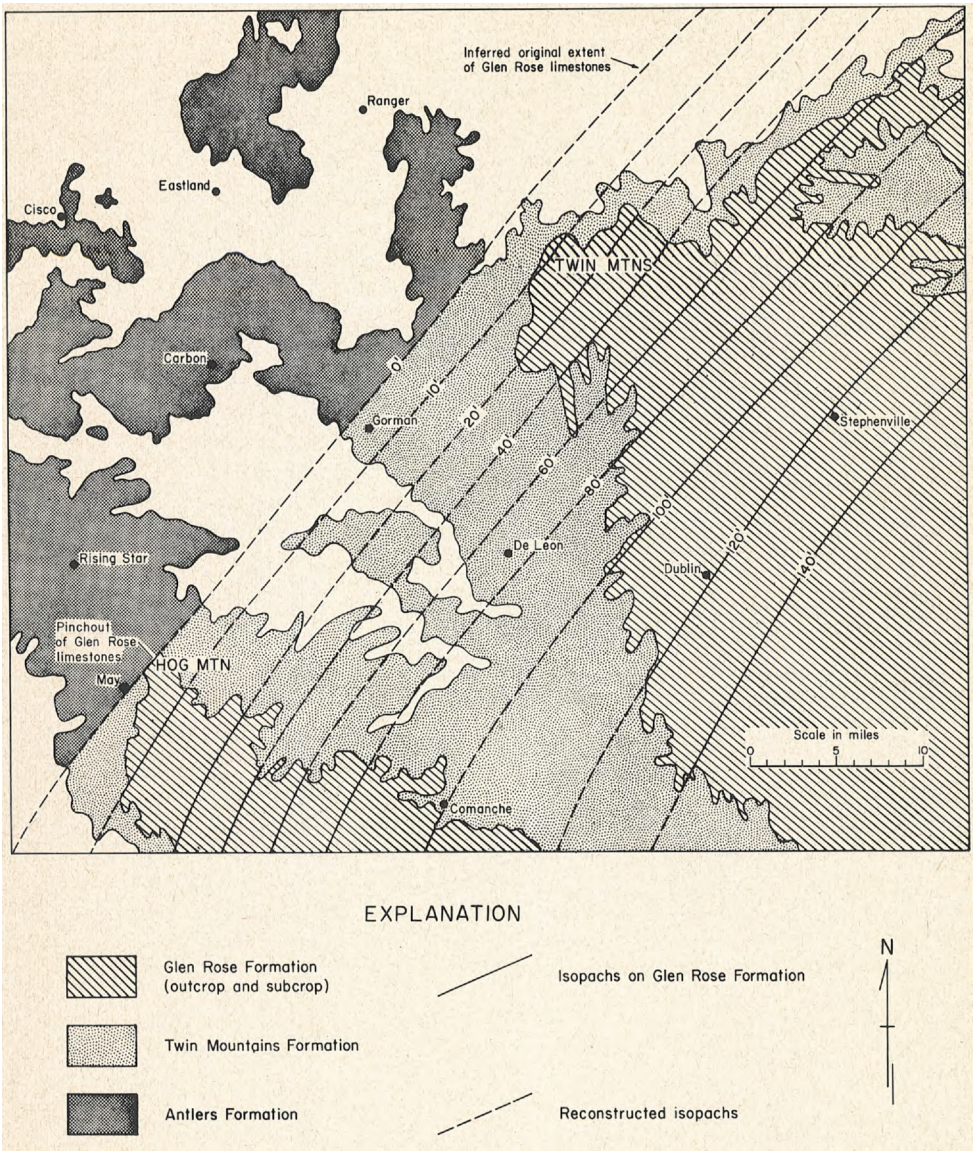

Fig. 8. Pinch-out and inferred original extent of Glen Rose Formation in western part of North-central Texas.

drawn slightly south of this area at the latitude of Decatur (Pl. I) where outcrop belt of basal Cretaceous rocks is narrow; this is a cartographic consideration and avoids placement of an arbitrary boundary in the irregular outcrop area at the Glen Rose pinch-out along drainage of Catlet Creek.

In North-central Texas, limestones of the Glen Rose Formation can be mapped westward to an area just east of May and north of Hog Mountain in northern Brown and northwestern Comanche counties (Pl. I). In northwestern Erath and eastern Eastland counties the Glen Rose is about 5 to 15

feet thick. Westward the nearest complete section of basal Cretaceous rocks is in southeastern Callahan County (Spring Mesa area); it contains no units definitely referable to the Glen Rose Formation. Most of the basal Cretaceous sequence in the intervening area has been removed by erosion. By means of preserved area of pinch-out (northeastern Brown County) and thickness trends of Glen Rose limestones, the original extent of the Glen Rose Formation can be reconstructed (fig. 8). The line marking the inferred original extent of the Glen Rose is used arbitrarily to separate the West-central Texas basal Cretaceous sequence (Antlers Formation) from the North-central Texas sequence (Twin Mountains, Glen Rose, and Paluxy Formations).

The boundary between the Twin Mountains and Travis Peak Formations is in an area of gradual facies change and is drawn arbitrarily along Salt Creek in east-central Brown County. This generally marks the northernmost occurrence of conglomerate derived from the Llano Uplift and of impure limestones within the basal Cretaceous sequence (Pl. I). This line is extended eastward to southeastward in subcrop and is south of the Leon Valley outcrop of Twin Mountains Formation.

ACKNOWLEDGMENTS

We acknowledge critical reading and discussion of the manuscript by Peter T. Flawn, Director, Bureau of Economic Geology; Virgil E. Barnes, Associate Director, Bureau of Economic Geology; and F. E. Lozo, Shell Development Company, Houston, Texas. Barnes and Lozo, however, do not necessarily agree with all the conclusions reached nor all the terminology applied in this paper. We also acknowledge discussions with Peter A. Boone, Mobil Oil Company, Houston, Texas, and Clyde H. Moore, Jr., Shell Development Company, Ventura, California. Josephine Casey edited the manuscript and saw the publication through the press. Illustrations were prepared under the direction of J. W. Macon.

REFERENCES

Adkins, W. S. (1933) The Mesozoic Systems in Texas, in Sellards, E. H., Adkins, W. S., and Plummer, F. B., The geology of Texas, Vol. I, Stratigraphy: Univ. Texas Bull. 3232 (Aug. 22, 1932), pp. 239-518.

_____, and Arick, M. B. (1930) Geology of Bell County, Texas: Univ. Texas Bull. 3016, 92 pp.

Barnes, V. E. (1948) Ouachita facies in Central Texas: Univ. Texas, Bur. Econ. Geology Rept. Invest. No. 2, 15 pp.

_____(1958) Field excursion, eastern Llano region: Univ. Texas, Bur. Econ. Geology Guidebook No. 1, 36 pp.

Boone, P. A. (1965) The stratigraphy and depositional history of the Trinity sands, Central Texas: Thesis Defense Field Conference, Baylor Univ., Field Trip Guidebook (unpublished), 20 pp.

Cheney, M. G., and Eargle, D. H. (1951) Geologic map of Brown County: Univ. Texas, Bur. Econ. Geology County Geologic Map.

Cloud, P. E., Jr., and Barnes, V. E. (1948) The Ellenburger Group of Central Texas: Univ. Texas Pub. 4621 (June 1, 1946), 473 pp.

Damon, H. G. (1940) Cretaceous conglomerates on the east side of the Llano Uplift, Texas: Ph. D. dissertation, Univ. Iowa, 90 pp.

_____(MS.) Geology and glass sand resources of the Trinity Group in North-central Texas: Univ. Texas, Bur. Econ. Geology (open-file report).

Fisher, W. L., and Rodda, P. U. (In press) Lower Cretaceous sands of Texas: Stratigraphy and resources: Univ. Texas, Bur. Econ. Geology Rept. Invest. No. 59.

Frederickson, E. A., Redman, R. H., and Westheimer, J. M. (1965) Geology and petroleum of Love County, Oklahoma: Oklahoma Geol. Survey, Circ. 63, 91 pp.

Hendricks, Leo (1957) Geology of Parker County, Texas: Univ. Texas Pub. 5724, 67 pp.

Hill, R. T. (1890) A brief description of the Cretaceous rocks of Texas and their economic uses: Texas Geol. Survey 1st Ann. Rept. (1889), pp. 105-141.

_____(1894) Geology of parts of Texas, Indian Territory, and Arkansas adjacent to Red River: Bull. Geol. Soc. Amer., vol. 5, pp. 297-338.

_____(1901) Geography and geology of the Black and Grand Prairies, Texas: U. S. Geol. Survey 21st Ann. Rept., pt. 7, 666 pp.

_____, and Vaughan, T. W. (1898) Geology of the Edwards Plateau and Rio Grande Plain adjacent to Austin and San Antonio, Texas, with reference to the occurrence of underground waters: U. S. Geol. Survey 18th Ann. Rept., pt. 2, pp. 193-321.

Holloway, H. D. (1961) The Lower Cretaceous Trinity aquifers, McLennan County, Texas: Baylor Geol. Studies, Bull. 1, 32 pp.

Leggat, E. R. (1957) Geology and ground-water resources of Tarrant County, Texas: Texas Board Water Engrs. Bull. 5709, 181 pp.

Lozo, F. E., and Stricklin, F. L., Jr. (1956) Stratigraphic notes on the outcrop basal Cretaceous, Central Texas: Gulf Coast Assoc. Geol. Soc., Trans., vol. 6, pp. 67-78.

Moore, C. H., Jr. (1964) Stratigraphy of the Fredericksburg Division, South-central Texas: Univ. Texas, Bur. Econ. Geology Rept. Invest. No. 52, 48 pp.

Moore, R. C. (1949) Rocks of Permian(?) age in the Colorado River valley, North-central Texas: U. S. Geol. Survey Oil and Gas Invest. Prelim. Map 80.

Paige, Sidney (1912) Description of the Llano and Burnet quadrangles: U. S. Geol. Survey Geol. Atlas, Folio 183, 16 pp.

Plummer, F. B. (1950) The Carboniferous rocks of the Llano region of Central Texas: Univ. Texas Pub. 4329 (Aug. 1, 1943), 170 pp.

_____, and Moore, R. C. (1921) Stratigraphy of the Pennsylvanian formations of North-central Texas: Univ. Texas Bull. 2132, 237 pp.

Scott, Gayle (1932) The geology of Wise County, Texas: Univ. Texas Bull. 3224, 77 pp.

Sidwell, Raymond (1947) Trinity sediments of North and Central Texas: Jour. Sed. Petrology, vol. 17, pp. 68-72.

Stafford, P. T. (1960) Geology of the Cross Plains quadrangle, Brown, Callahan, Coleman, and Eastland counties, Texas: U. S. Geol. Survey Bull. 1096-B, 72 pp.

Taff, J. A. (1892) Reports on the Cretaceous area north of the Colorado River: Texas Geol. Survey 3rd Ann. Rept. (1891), pp. 267-379.

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THE UNIVERSITY OF TEXAS
BUREAU OF ECONOMIC GEOLOGY
PETER T. FLAWN, DIRECTOR

BASAL CRETACEOUS ROCKS
TEXAS
PLATE I

GEOLOGIC MAP OF BASAL CRETACEOUS ROCKS BETWEEN COLORADO AND RED RIVERS, TEXAS

1966

Map compiled from the following sources (see References for full citations):

Reconnaissance geologic mapping by W. L. Fisher and Peter U. Rodda

Unpublished geologic mapping, Bureau of Economic Geology

Adkins and Arick (1930, pl. 1)
Barnes (1948, fig. 1)
Barnes (1958, figs. 8 and 11)
Cheney and Eargle (1951)
Hendricks (1957, pl. 1)
Leggat (1957, pl. 1)
Moore, C. H. (1964, fig. 4)
Moore, R. C. (1949, Sheet 1)
Paige (1912)
Plummer (1950, pl. 1)
Plummer and Moore (1921, pl. 1)
Scott (1932, pl. 1)
Stafford (1960, pl. 1)

EXPLANATION

Kf

Fredericksburg rocks

Walnut Formation (calcareous clay), Comanche Peak and Goodland Formations (nodular limestone), and Edwards Formation (hard limestone)

North-central and Central Texas

Kp

Paluxy Formation

Sand, light buff to light gray, cross-bedded to laminated and massive, very fine to fine grained, in part argillaceous and silty; *clay*, light gray to light red, laminated to massive. Thickness, 0 to 300 feet

Kgr

Glen Rose Formation

Alternating beds of limestone and silt and clay; *limestone*, buff gray, silty, argillaceous, sandy, and dolomitic, thin to thick bedded, thicker bedded and partly crystalline in lower part; *silt and clay*, light to dark buff gray, calcareous. Thickness, 0 to 600 feet

West-central and North Texas

Ka

Antlers Formation

Sand, buff, weathers buff to locally variegated, fine to coarse grained, conglomeratic mainly in lower part, argillaceous in upper part; *clay*, mostly red, locally gray and green, silty, locally with beds of hard calcareous siltstone; *conglomerate*, siliceous (chert, quartz, and quartzite pebbles). Lower and upper units largely sand, middle unit chiefly clay. Thickness, 30 to 300 feet in West-central Texas, 550 to 500 in North Texas

North-central Texas

Ktm

Twin Mountains Formation

Sand, buff, locally weathers red buff, cross-bedded to laminated or massive, conglomeratic in lower part; *clay*, red, gray, and green, silty, laminated to massive; *conglomerate*, siliceous (chert, quartz, and quartzite pebbles and granules). Thickness, 125 to 250 feet

Central Texas

Ktp

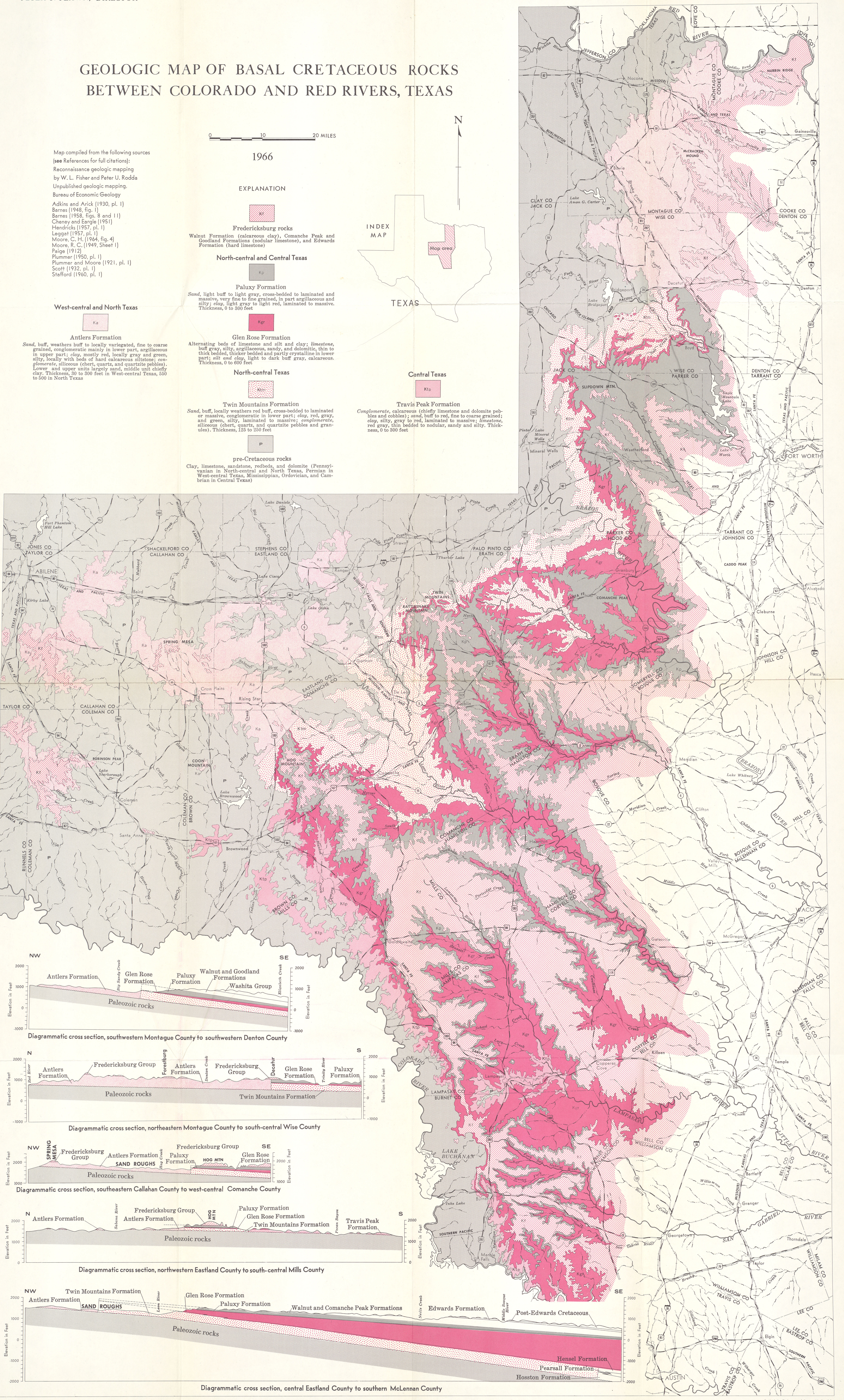
Travis Peak Formation

Conglomerate, calcareous (chiefly limestone and dolomite pebbles and cobbles); *sand*, buff to red, fine to coarse grained; *clay*, silty, gray to red, laminated to massive; *limestone*, red gray, thin bedded to nodular, sandy and silty. Thickness, 0 to 300 feet

P

pre-Cretaceous rocks

Clay, limestone, sandstone, redbeds, and dolomite (Pennsylvanian in North-central and North Texas, Permian in West-central Texas, Mississippian, Ordovician, and Cambrian in Central Texas)



Base modified from Army Map Service 1" x 2" map series

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