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G.Q. Map No. 13. Cain City Quadrangle, Gillespie & Kendall Counties, Texas. By V. Barnes. Tx. Univ., BEG.

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GEOLOGIC QUADRANGLE MAPS

**Cain City Quadrangle
Gillespie and Kendall Counties, Texas**

By

VIRGIL E. BARNES



February, 1952

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GEOLOGY OF THE CAIN CITY QUADRANGLE, GILLESPIE AND KENDALL COUNTIES, TEXAS

VIRGIL E. BARNES

GENERAL SETTING

Cain City quadrangle is south of the Llano region and is in the marginal portion of the Edwards Plateau where much of the plateau surface has been destroyed by erosion.

exist near-by beneath the alluvium and Cretaceous sediments. The rock is cherty, much jointed, and much of it is of a pleasing color.

The woodland still remains, having been cleared, the land now being under cultivation. The Hensell sand outcrop area, therefore, supports a denser population than does any other unit of the Cretaceous outcropping in the quadrangle.

Porocystis was seen in the road material pit half a mile east of locality 9-2B, and this is the westernmost occurrence of this species noted in Gillespie County.

Arctica sp. Pecten (Neithea) occidentalis (Conrad) Isocardia sp. Modiola concentric-costellata (Roemer) Brachydontes pederalis (Roemer) Gryphaea mucronata Gabb Exogyra texana Roemer

QUATERNARY DEPOSITS

High gravel.—Some of the deposits mapped as high gravel are essentially deposits of colluvium which have moved down slope from the Comanche Peak scarp in the Palo Alto Creek quadrangle. These deposits are largely derived from the Edwards limestone and may at one time have practically masked the Hensell sand within the Cain City quadrangle.

in the Wilberns formation, except for some of the stromatolitic limestones of the Point Peak shale and San Saba limestone members. To which member this limestone should be assigned cannot be determined without deeper drilling.

Road material.—Road material has been produced from three geologic units within the Cain City quadrangle. Six of the pits mapped are within the Glen Rose limestone and are mainly materials used on local roads.

southward trend is present, and one of the few faults in Cretaceous rocks noted in the vicinity of the Llano uplift is in the southern part of the quadrangle.

MEZOZOIC ROCKS CRETACEOUS SYSTEM (LOWER CRETACEOUS) Single Hills Formation Hensell sand member (Barnes, 1948).

The Glen Rose limestone consists of alternating beds of limestone, clay, and sand, or, more correctly stated, beds having various proportions of these materials.

quadrangle the bench formed by the Walnut clay is wide enough to map in only a few places, mostly on points of ridges. One isolated outlier of Walnut was mapped southeast of Cain City.

ler (1931) identifies the oak as "Quercus texana Sargent (Texas oak)" and states that it is the dominant tree on the Walnut and Comanche Peak.

alluvium is composed of sand and silt at the surface and of coarser materials beneath.

wooded from 23 to 284 feet below the surface. The total solids range from 291 to 1831 parts per million with only four wells having more than a thousand parts per million.

stone. The stone is of value for crushing, but the deposit is too near river level and any quarry established would be subject to overflow.

GEOLOGIC FORMATIONS

PALEOZOIC ROCKS

ORDOVICIAN SYSTEM (LOWER ORDOVICIAN ELLENBURGER GROUP)

Tanyard Formation

Staedebach member.—Outcrops of the Staedebach member are mostly along the banks and bed of Pedernales River and Palo Alto Creek and occur as isolated inliers in the northeastern portion of the quadrangle.

material is concentrated along them. The two samples take an excellent polish.

Localities 6-20A, 3.5 miles east-northeast of Cain City—Arctica medialis (Conrad) Protocardia sp. Cardita sp. Homomya solida Cragin

Localities 9-3A, 1.4 miles east-southwest of Cain City—Aporrhais? cf. subfusiformis (Shumard) Tylostoma regina (Cragin) Protocardia sp. Tapes of cf. aldamense Böse

Edwards limestone.—The Edwards limestone attains a thickness of about 150 feet in the southwestern part of the Cain City quadrangle in the vicinity of the B. L. Raborn, Jr., No. 1 Hohenberger well.

Some beds of limestone in the upper portions of the Glen Rose may also be suited to local building. The Glen Rose limestones in general are soft and weather rapidly, but some beds are hard and resistant.

Further north and west an aquifer exists near the base of the Edwards limestone, but within the quadrangle no springs were noted at this horizon and no wells penetrate it.

Selected References BARNES, V. E. (1940) Pre-Cambrian of Llano region with emphasis on tectonics and intrusives, in Guidebook to excursions offered in connection with 53rd annual meeting (Austin, Texas): Geol. Soc. Amer., pp. 44-55.

PALEOZOIC ROCKS

ORDOVICIAN SYSTEM (LOWER ORDOVICIAN ELLENBURGER GROUP)

Tanyard Formation

Staedebach member.—Outcrops of the Staedebach member are mostly along the banks and bed of Pedernales River and Palo Alto Creek and occur as isolated inliers in the northeastern portion of the quadrangle.

between these facies roughly parallels the base of the Glen Rose limestone and therefore rises stratigraphically northward, being controlled in part by the proximity of the shore during deposition of the sediments.

Localities 9-17A, 3.9 miles southwest of Cain City—Turritella sp. Lunatia? sp. Tapes of cf. aldamense Böse

Localities 9-17B, 1.2 miles north-northeast of Cain City—Loriola texana (Clark) Cucullaea sp. Trigonina sp. Ostrea sp. Lunatia? sp.

Another collection, locality 130T see 86T-9-18A, was made near the southern edge of the quadrangle in Kendall County along a road 1.5 miles west of the old San Antonio highway, west of and within a few hundred feet of the fault.

measured elsewhere in the Llano uplift and if the boundary is correctly placed probably indicates that the lower portion of the Staedebach is being replaced in a southward direction by material having lithologic characteristics of the Threadgill member.

Some beds of limestone in the upper portions of the Glen Rose may also be suited to local building. The Glen Rose limestones in general are soft and weather rapidly, but some beds are hard and resistant.

Smoothington granite mass, Llano County, Texas: Geophysics, vol. 9, pp. 79-83. SHIELD, EUGEN (1937) Records of wells, ditches, logs, and water analyses in Gillespie County, Texas: State Board of Water Engineers, 51 pp.

Gorman Formation

Dolomitic facies.—The dolomitic facies of the Gorman formation crops out in the bed and on the north bank of Pedernales River northeast of Rocky Hill School. The dolomite is mostly microgranular and contains sand in several beds, one of which is directly above the coarse-grained Staedebach dolomite in the bed of the Pedernales.

The Hensell is so little indurated that it readily breaks down and forms gentle slopes except immediately beneath the Glen Rose limestone. The more siliceous and coarser lower portion supports a growth of broad-leaf oaks which on aerial photographs shows as a featureless expanse of woodland. Little of

Localities 9-15A, 3.2 miles west of Cain City—Gastropods, small, high spired

Localities 9-16A, 3.4 miles west-southwest of Cain City—Oysters, probably 2 species

Localities 9-17C, 3.9 miles southwest of Cain City—Turritella sp. Lunatia? sp. Tapes of cf. aldamense Böse

Localities 9-17D, 3.9 miles southwest of Cain City—Turritella sp. Lunatia? sp. Tapes of cf. aldamense Böse

Some beds of limestone in the upper portions of the Glen Rose may also be suited to local building. The Glen Rose limestones in general are soft and weather rapidly, but some beds are hard and resistant.

WILMARTH, M. G. (1938) Lexicon of geologic names of the United States, Part 1: U. S. Geol. Survey Bull. 896, 1244 pp.

SAMPLE DESCRIPTIONS

Table with columns for Locality, Depth in feet, and Sample Description. Includes detailed descriptions of various geological samples such as 'Dolomite—sublithographic, light gray to medium light gray and light olive-gray' and 'Sand—composed of coarse grained quartz and containing microcline fragments'.

SEDIMENTARY ROCKS

Qal
Alluvium
(gravel, sand, and silt along stream bottoms)

Ohg
High gravel
(gravel and sand in terraces along streams)

UNCONFORMITY

Ked
Edwards limestone
(well bedded, in part cherty, in part magnesian, varies widely in composition, hardness, and thickness of beds)

Kep
Comanche Peak limestone
(marl and marly limestone ranging from nodular at base to well bedded at top)

Kwa
Walnut clay
(calcareous clay grading upward into the marl of the overlying member; contains a profusion of *Exogyra texana*)

Kshgr
Glen Rose limestone member
(alternating beds of limestone, marl, and clay, some of which are highly arenaceous)

Kshg
Hensell sand member
(sand, silt, and clay, predominantly red and gray, with conglomerate, Kshh(c), at base)

UNCONFORMITY

Og(c)
Gorman formation
(showing calcitic Og(c), and dolomitic Og(mg), facies. Thickly to thinly bedded cherty limestone and dolomite; dolomite predominantly microgranular to fine grained)

Og(mg)
Staudach member
(showing fine grained, cherty, Og(mg), and coarse grained noncherty, Og(mg), dolomitic facies)

UNCONFORMITY

D
U
Known and inferred fault
(U, upthrown side; D, downthrown side)

Observed and inferred contact

Strike and dip of beds
+ 5-28

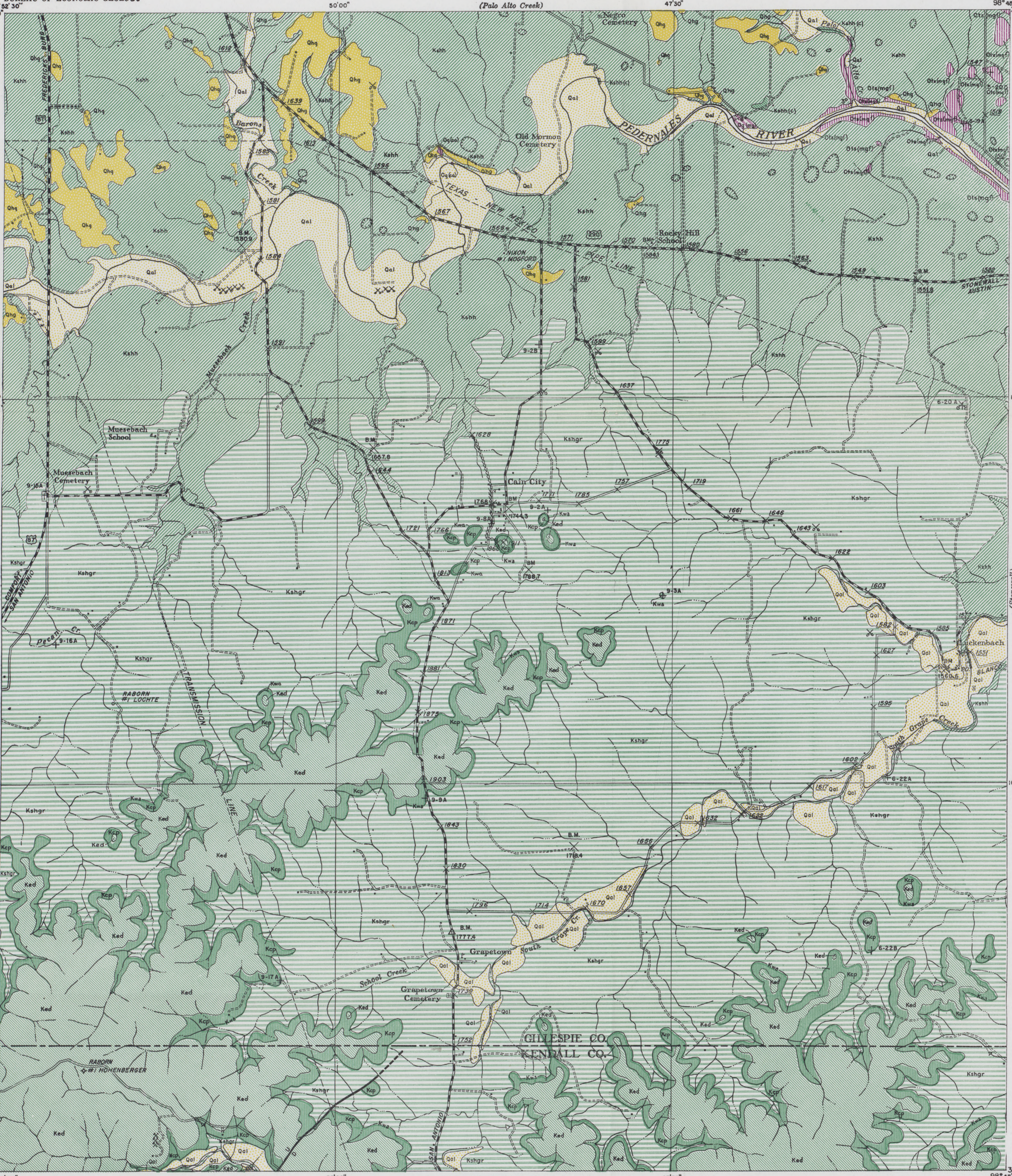
Locality of fossil collection

Tank
(earth-dammed pond for water storage)

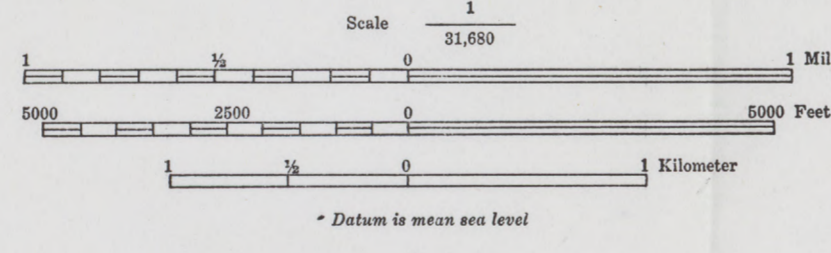
Alidade elevation

Alidade elevation of gravity station

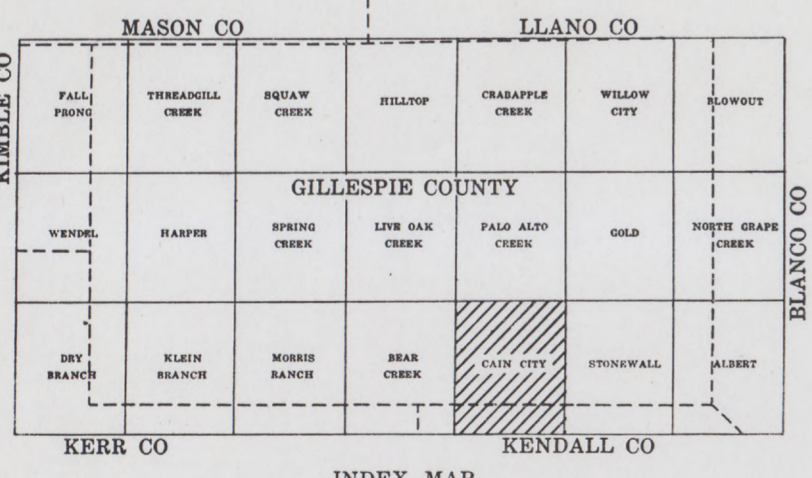
Line of described section



Base from U. S. Department of Agriculture, Agricultural Adjustment Administration, aerial photographs flown by Kargl Aerial Surveys, Ltd., 1938.



Geology by Virgil E. Barnes 1939-1947
Assisted by Louis Dixon and L. E. Warren
Cartography by Ann Connor and J. W. Mason



GEOLOGIC MAP OF THE CAIN CITY QUADRANGLE, GILLESPIE AND KENDALL COUNTIES, TEXAS