CENTRAL TEXAS LOWER CRETACEOUS STRATIGRAPHY

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ABSTRACT

The Lower Trinity Group consists of the terrigenous Hosston formation (below) and the carbonate Sligo formation; updip, the Hosston thins by basal onlap and climbs upward by intercalation with the Sligo. This Group is probably represented by a barrier reef section downdip.

The Bexar shale, Cow Creek limestone and Hammett shale make up the laterally persistent Middle Trinity Group or Pearsall.

The dominantly limestone, dolomite and marl strata between the base of the Upper Trinity Group (Glen Rose limestone on Hensel sand at the outcrop) and the top of the upper Edwards, and their updip lateral equivalents, were deposited in shallow water behind the Stuart City coral-rudistid barrier reef (Fig. 1). Poorly-bedded reefal limestones were deposited to their greatest thickness near the generally positive San Marcos arch in the back-reef (Stuart City) area during the times of deposition of parts of the lower Glen Rose, and lower and upper Edwards; these limestones thin by intercalation with the usually more shaly, probably deeper water, laterally persistent evaporites, limestones, marls, and shales in the East Texas and Rio Grande basins (Figs. 1, 2, 3). The lower Glen Rose reefs probably formed the southwestern, and the Stuart City reef the southern and eastern, circulation barrier of the Ferry Lake anhydrite evaporation pan. The beds below the reefal limestone interval in the lower Glen Rose are dominantly brown, dolomitic, detrital, sometimes pisolitic and oolitic limestone; usually above the reefal limestone there is a sequence of grey shaly limestone and shale with abundant *Orbitolina texana*. The upper Glen Rose contains laterally persistent beds which are petrologically similar to the Glen Rose interval below the reefal sequence.

The writer was not able to correlate regionally the Bull Creek limestone member of the Walnut formation, the basal unit of the Fredericksburg Division at the outcrop (Fig. 2); the base of the Bee Cave shaly limestone, a regionally traceable horizon, was mapped as the top of the Upper Trinity Group.

The Fredericksburg Group includes the strata between the base of the Bee Cave and the base of the Kiamichi or its laterally continuous equivalent, the middle (Kiamichi) Edwards. The stratigraphic relationships between the Walnut formation (Bull Creek limestone, Bee Cave, Cedar Park limestone, an oolitic lentil of restricted distribution, and an upper marl), the nodular Comanche Peak limestone, and the dolomitic and sometimes rudist limestone of the lower Edwards are shown on figures 2 and 3.

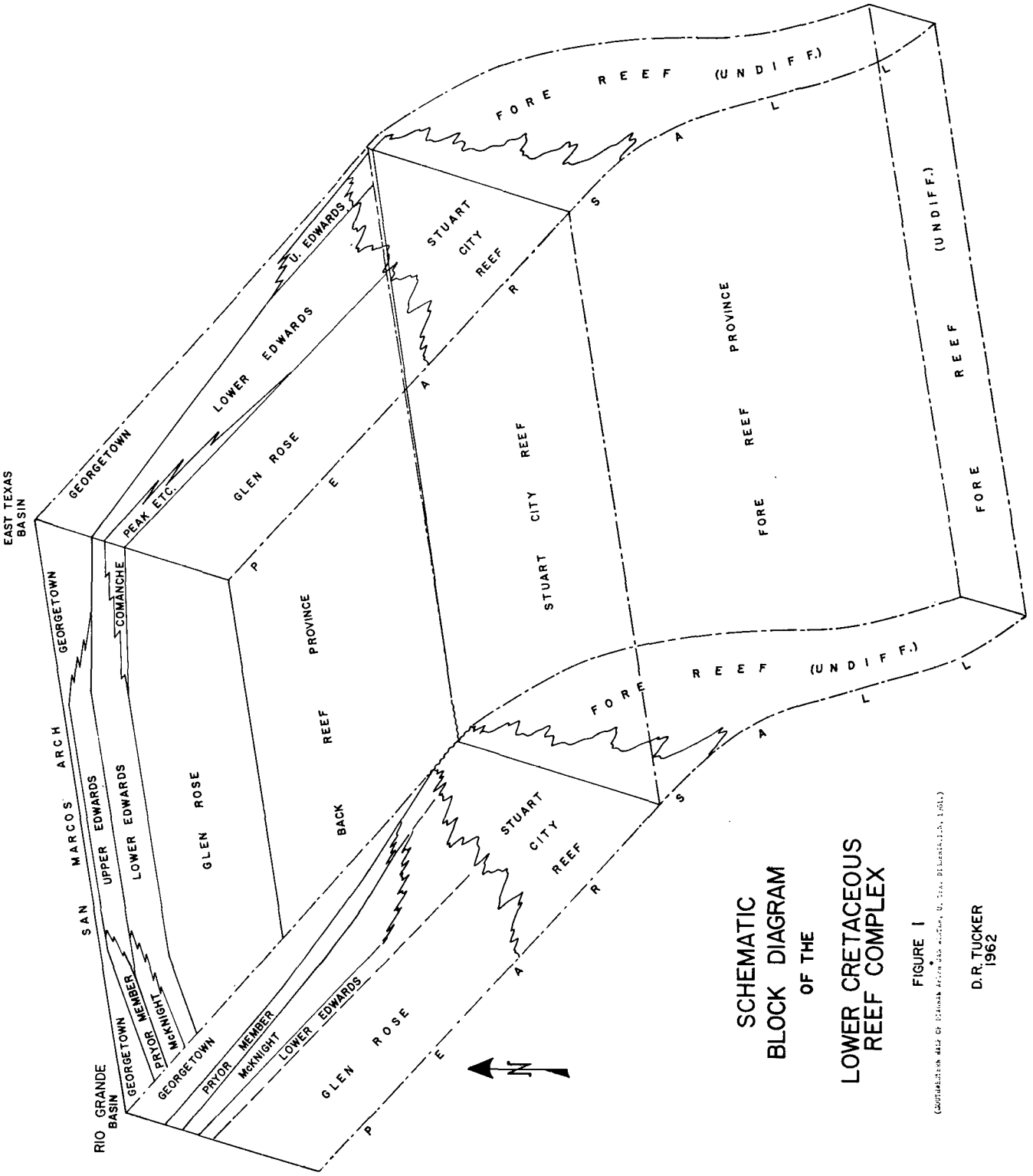
The Kiamichi interval occurs between the lower Edwards and the Georgetown limestone northeast of the pinch-out line of the upper Edwards (Figures 2, 3, 4, 7) and is within the Edwards formation south of the above mentioned line; the Kiamichi is absent (Fig. 5) by basal onlap around the Belton high (proposed new term) (Fig. 6), a periodically positive area in Bell and parts of adjacent counties. A southeast-plunging synclinal trough, the Round Rock syncline (proposed new term), reflected by thickness increases (Fig. 5), facies changes (Figures 2, 3) and pinch-out lines, is between the San Marcos arch and the Belton high.

The upper Edwards dolomitic limestone and rudistid limestone interfingers with the shaly limestone of the lower part of the Duck Creek member of the Georgetown formation (Figs. 1, 2, 4); the Kiamichi (black shale), middle (Kiamichi) Edwards (dark shaly limestone), upper Edwards, Georgetown, Del Rio clay and Buda formation, genetically related by local unconformities and regional key bed boundaries, are placed in the Washita Division. The upper or lower Edwards should be renamed; this problem is under study.

The major structures considered relevant to the Lower Cretaceous strata are diagramatically shown on Figure 6. Two synclinal troughs occur 10 to 20 miles behind the Stuart City Reef: one plunges northeast and the other southwest; all units of which the boundaries can be mapped (beds to formations) thicken into the center of these troughs and then thin onto their southeastern flanks (the Del Rio may be absent immediately southeast of the Dubose field in southern Gonzales County).

The Sample fault system (proposed new term) generally concides in position with the synclinal troughs mentioned above; flexing and/or faulting occurred during early Cretaceous at the present position of the faults. Up-to-the-coast faults are dominant southeast of the axial part of the synclinal troughs and down-to-the-coast faults are dominant on the northwest (Fig. 6).

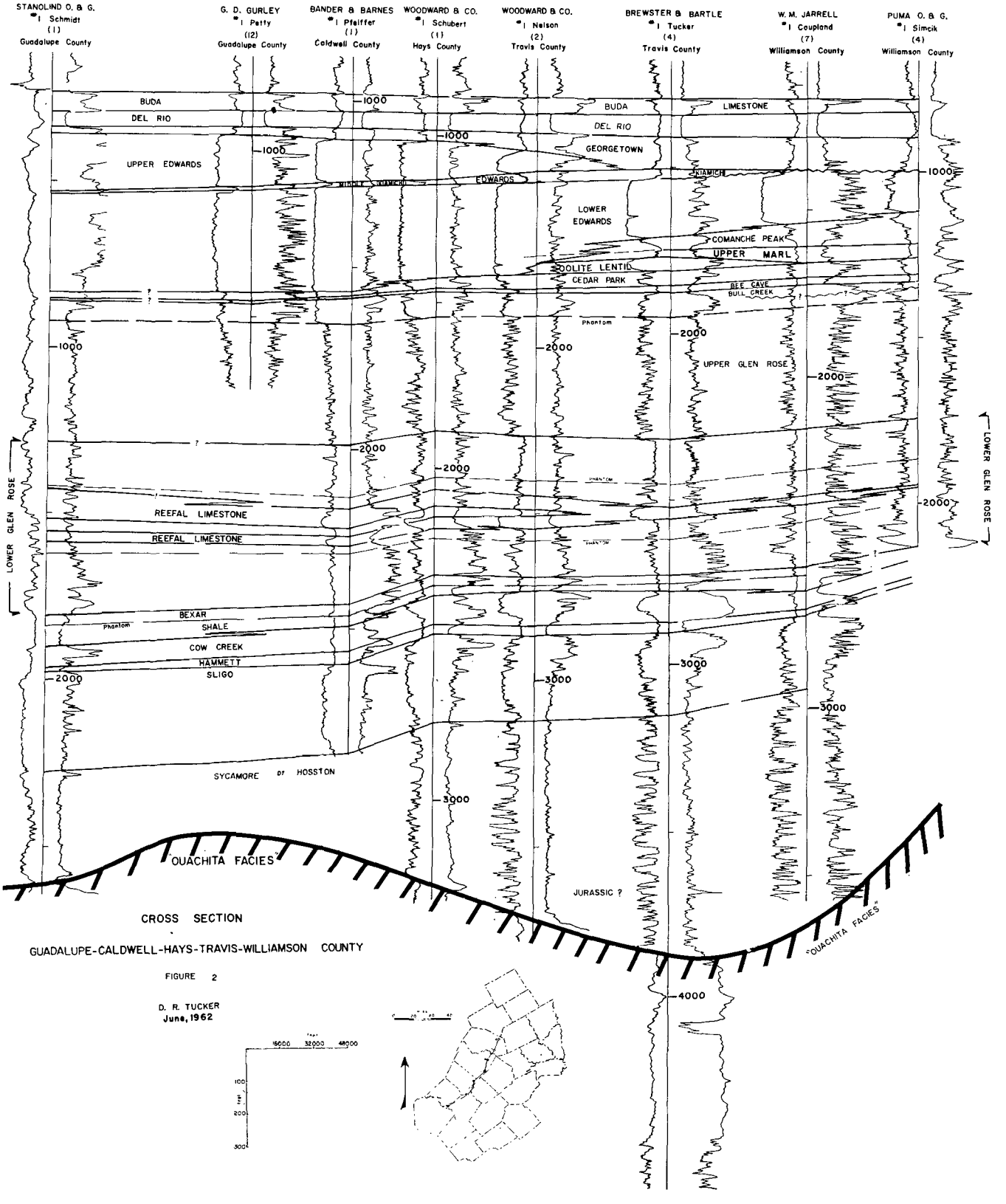
[1]Glendale, California



SCHEMATIC BLOCK DIAGRAM OF THE LOWER CRETACEOUS REEF COMPLEX

FIGURE 1

D.R. TUCKER 1962



CROSS SECTION

GUADALUPE-CALDWELL-HAYS-TRAVIS-WILLIAMSON COUNTY

FIGURE 2

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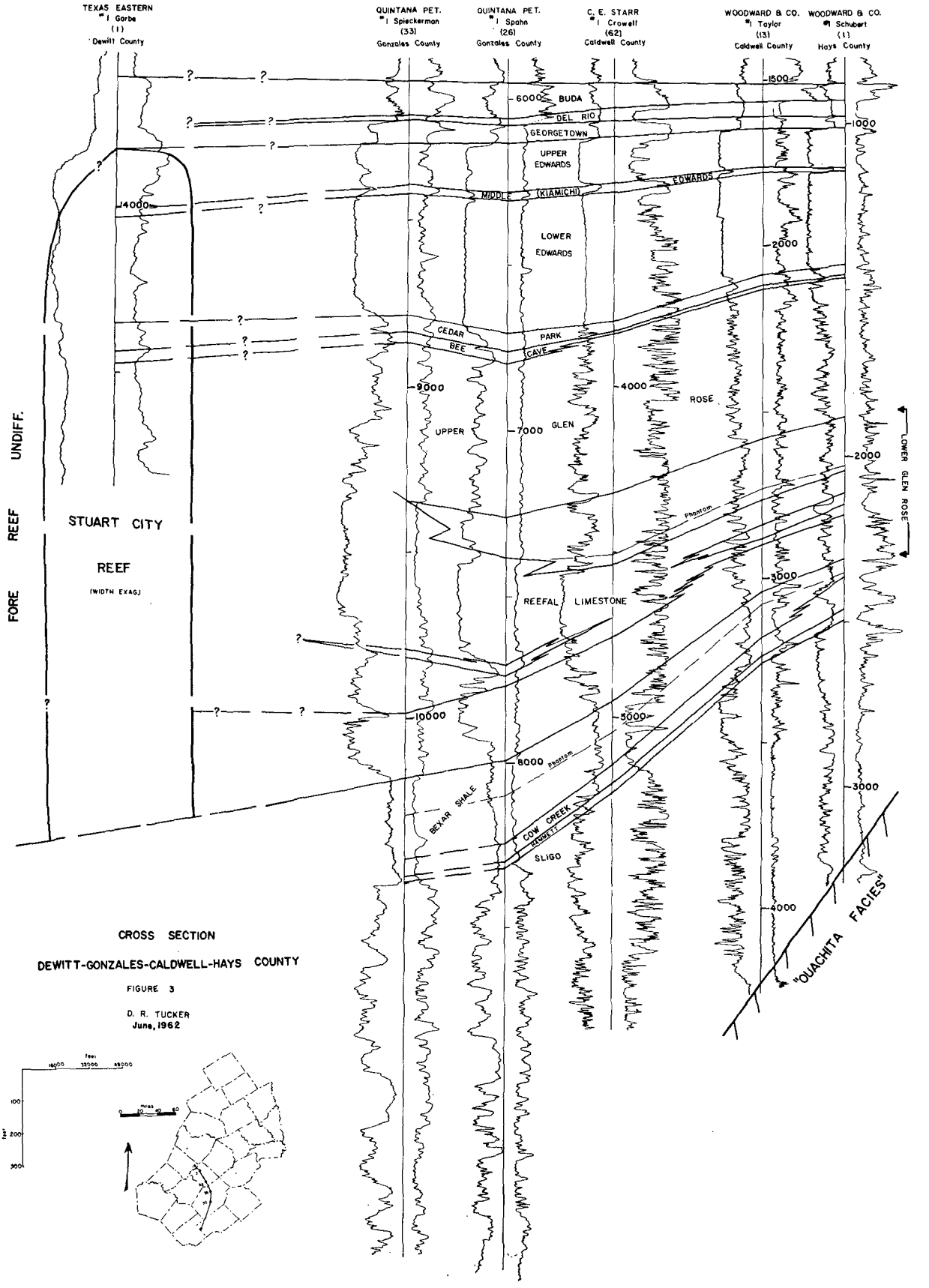
June, 1962



CROSS SECTION

DEWITT-GONZALES-CALDWELL-HAYS COUNTY

FIGURE 3

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June, 1962

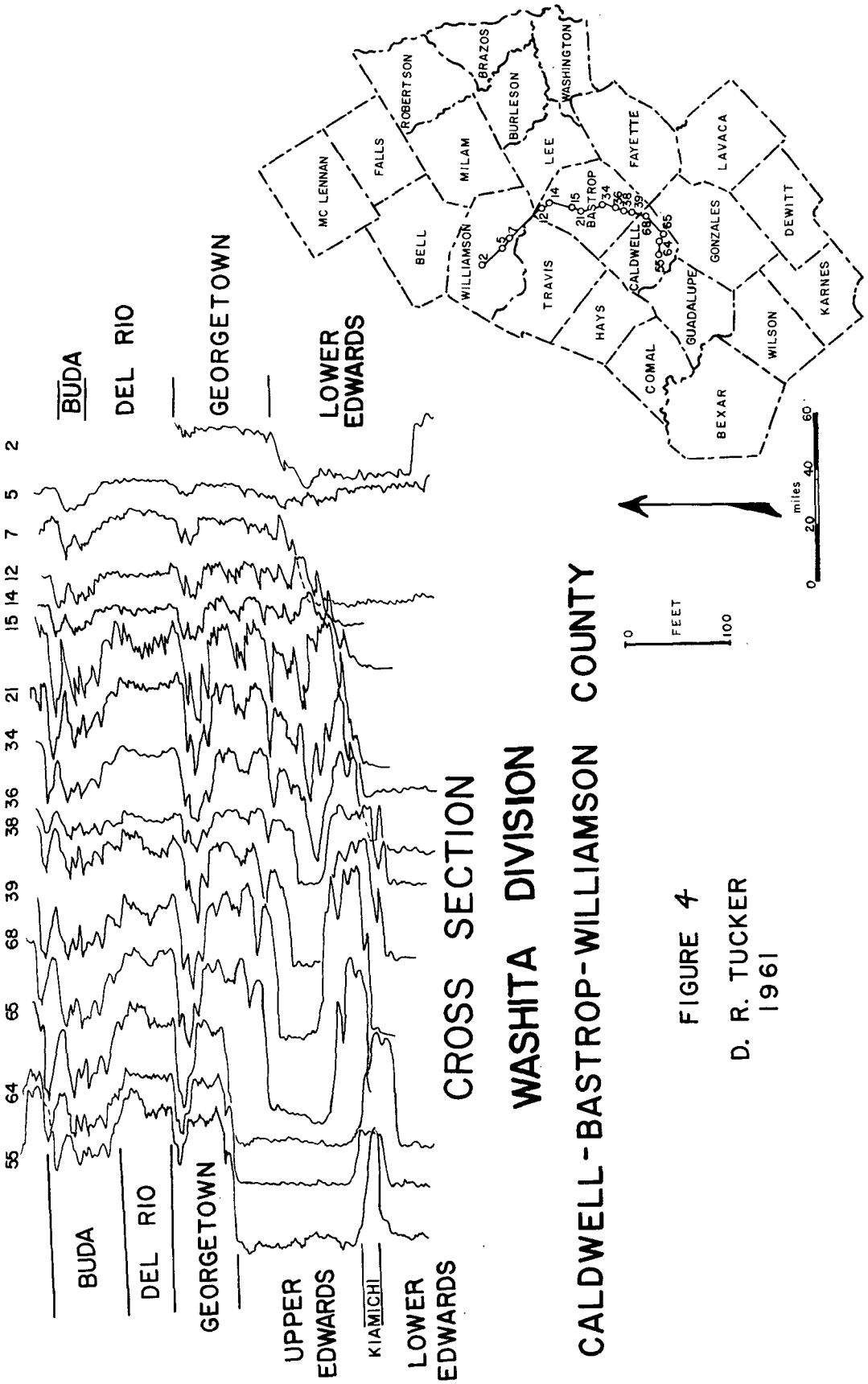

FIGURE 4

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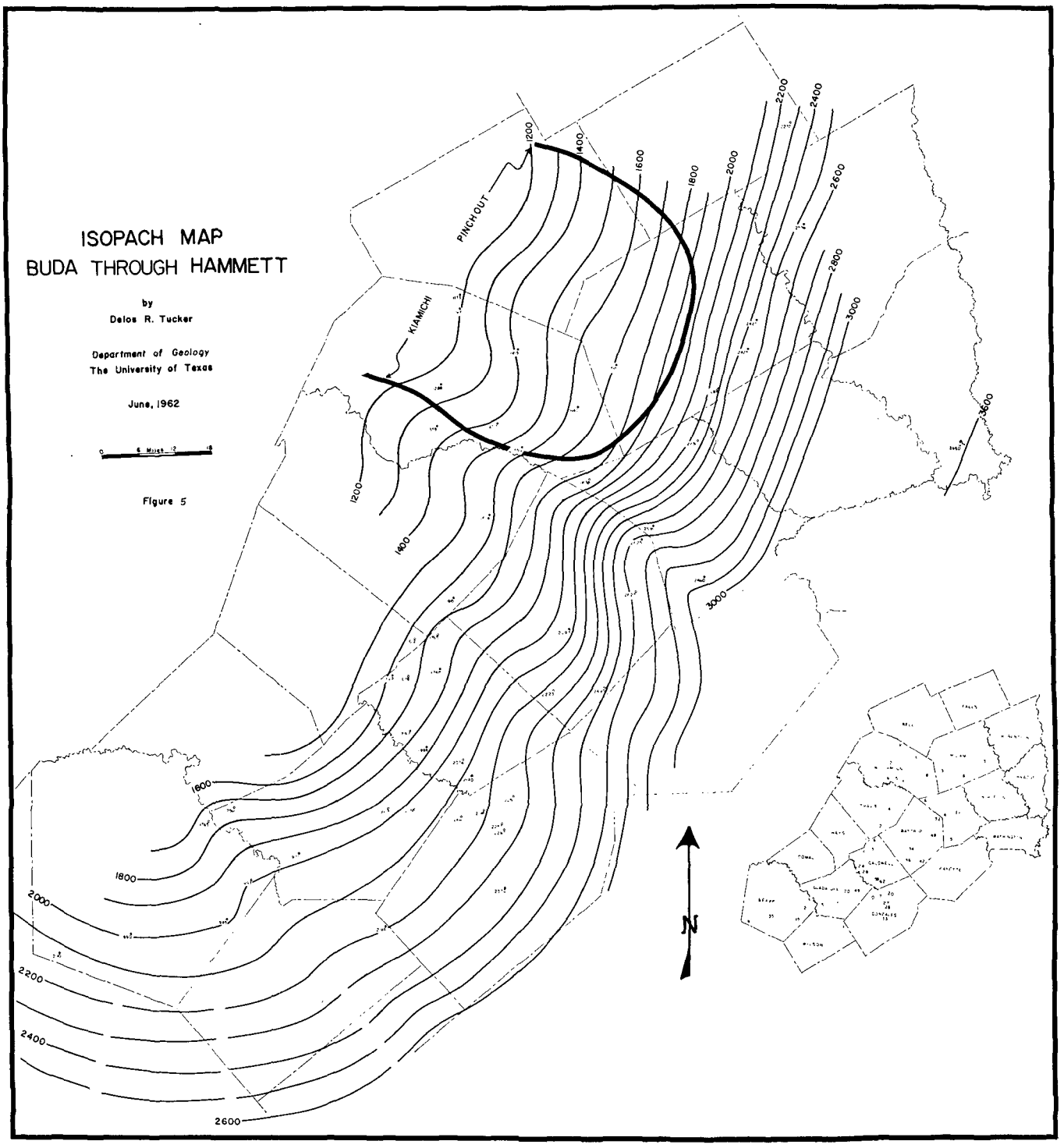
1961


ISOPACH MAP
BUDA THROUGH HAMMETT
by
Delos R. Tucker
Department of Geology
The University of Texas
June, 1962
Figure 5
PINCHOUT
KIAMICHI
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3600
N

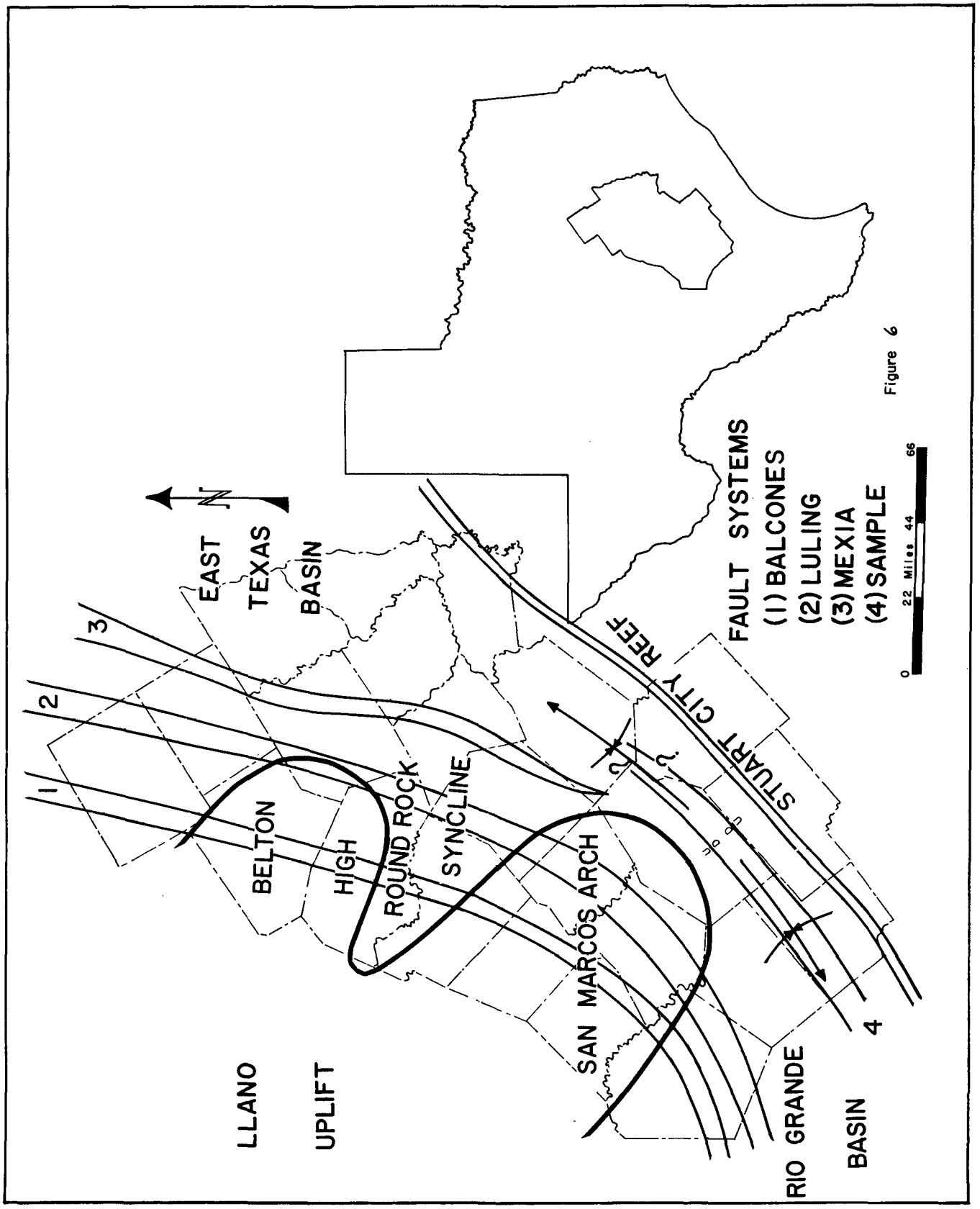
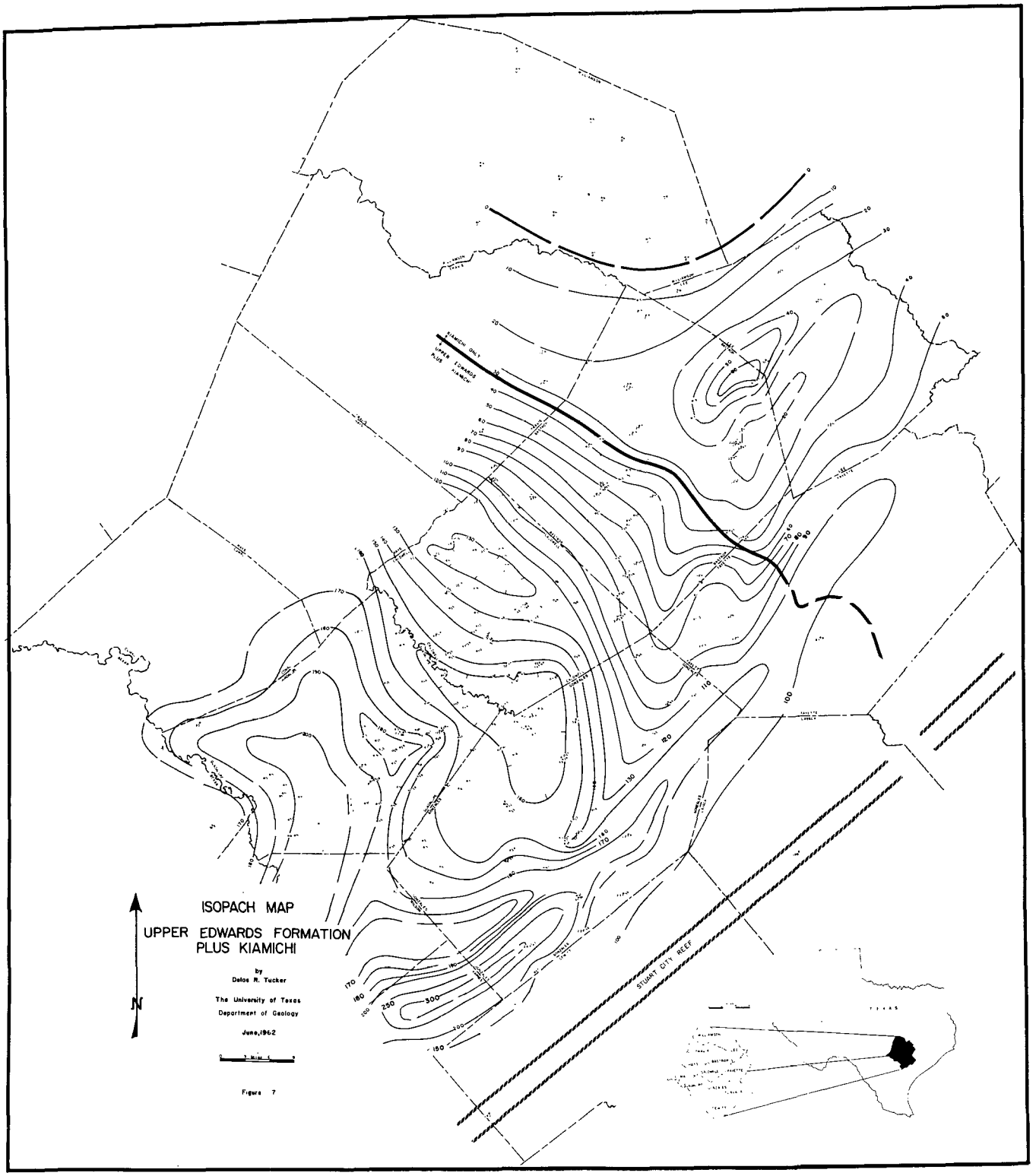

LLANO UPLIFT
BELTON HIGH
ROUND ROCK SYNCLINE
EAST TEXAS BASIN
SAN MARCOS ARCH
RIO GRANDE BASIN
STUART CITY REEF
FAULT SYSTEMS
(1) BALCONES
(2) LULING
(3) MEXIA
(4) SAMPLE
0 22 44 66
1
2
3
4
N

Figure 6


ISOPACH MAP
UPPER EDWARDS FORMATION
PLUS KIAMICHI
by
Delos R. Tucker
The University of Texas
Department of Geology
June, 1962
N
STUART CITY REEF
Figure 7