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The Moore Hollow Group of Central Texas Part 2

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BUREAU OF ECONOMIC GEOLOGY
THE UNIVERSITY OF TEXAS, AUSTIN

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INTRODUCTION

The bulk of the typescript for the Moore Hollow Group report, prepared for publication as a University of Texas Publication, was filed July 22, 1960, awaiting the completion of the paleontological portion of the report by Bell. Although the faunal studies in 1960 were adequate for the report, Bell wanted to prepare a more complete synthesis of the paleontological material and toward that goal was still preparing fossils for photography at the time of a stroke in 1970 which incapacitated him. Rather than let the Moore Hollow Group manuscript languish, Barnes extracted pertinent paleontological data from the various publications of Bell's students, and, with the kind help of A. R. Palmer, State University of New York, Stony Brook, and E. L. Yochelson and M. E. Taylor, U.S. Geological Survey, fossil lists were updated so that the manuscript could be published.

At the time the Moore Hollow Group manuscript was put aside in 1960 it had been prepared for publication as a companion volume to the "Ellenburger Group of Central Texas" (Cloud and Barnes, 1948), a publication which included supporting data as well as conclusions drawn therefrom. In the meantime, the Ellenburger report had gone out of print and printing costs had risen to the point that it was no longer feasible to include the supporting data in the Moore Hollow Group report. Because of printing costs, the supporting data, Part 2--Surface Stratigraphic Data, and Part 3--Subsurface Stratigraphic Data, are now on open file at the Bureau of Economic Geology, the University of Texas at Austin.

Part 1--General Stratigraphy and Petrology was published in 1977 as Bureau of Economic Geology Report of Investigations No. 88. One of the illustrations from Part 1, entitled "Correlation of Cambrian rocks in Central Texas," was placed on open file in 1963, and prints of this illustration are available from the Bureau of Economic Geology, Box X, University Station, Austin, Texas, 78712.

Critical work on the Lower Paleozoic rocks of Central Texas began with that of Dake and Bridge (1932), and subsequent studies by Bridge and later by Barnes served to delineate the larger features of the Moore Hollow Group. A preliminary report by Cloud, Barnes, and Bridge (1945) summarized what was then known of the rocks above the *Plectotrophia* Bed in the Point Peak Member; Bridge, Barnes, and Cloud (1947) described all the units named or redefined in order to furnish standard reference for them. Their nomenclature is used today except that Barnes and Bell (1954b) dropped the name Pedernales Dolomite, including all dolomite so named with the San Saba, and changed the name San Saba Limestone to San Saba Member, a member defined as having dolomitic and calcitic facies, thus bringing the nomenclature of the upper part of the Wilberns Formation into conformity with that of the overlying Threadgill and Staendebach Members of the Tanyard Formation of the Ellenburger Group.

The abstract in Part 1 of "The Moore Hollow Group of Central Texas" is repeated as follows:

"The rocks in Central Texas, here named the Moore Hollow Group, include Middle and Upper Cambrian rocks and locally up to 90 feet of Lower Ordovician rocks. In ascending order, the Moore Hollow Group is composed of the Riley Formation (Hickory Sand-Stone, Cap Mountain Limestone, and Lion Mountain Sandstone Members) and the Wilberns Formation (Welge Sandstone, Morgan Creek Limestone, Point Peak, and San Saba Members).

"A sequence of Dresbachian to earliest Ordovician faunas, as complete as any known in North America, was found during the field and laboratory work on this sequence of rocks. The mostly granular limestone of the Moore Hollow Group is composed dominantly of pelmatozoan debris; trilobite debris is abundant and in a few beds is dominant. These rocks accumulated in shallow water in a broad, baylike area.

"The boundary between the Moore Hollow and overlying Ellenburger Group is identified using lithic evidence only. It is in a gradational sequence formed during continuous sedimentation, and in general, the boundary is younger toward the shore. Within the Llano region, the boundary between lithic types crosses the Cambrian-Ordovician boundary; consequently, Ordovician rocks are included in the Moore Hollow Group to the west and Cambrian rocks are included in the Ellenburger Group to the east.

"Although the Moore Hollow Group is composed of distinctly mappable units in the Llano region, shoreward in the subsurface the carbonate rocks give way to terrigenous materials, and the identity of the various units is no longer maintained. In the opposite direction in the subsurface, terrigenous units give way to carbonate rocks, a disconformity between the Riley and Wilberns Formations disappears, and dolomite becomes the principal carbonate of the Wilberns Formation."

The thicknesses of Moore Hollow Group and contiguous Threadgill Member rocks are given in table 1.

A diagrammatic representation of Moore Hollow and Ellenburger rocks is shown in figure 1.

Table 1. Thicknesses* of units of the Moore Hollow Group and contiguous Threadgill Member rocks in measured sections, Llano region.

Measured sections		Hickory Sandstone	Cap Mountain Limestone	Lion Mountain Sandstone	Riley Formation	Welge Sandstone	Morgan Creek Limestone	Point Peak Member	San Saba Member			Wilberns Formation	Moore Hollow Group	Threadgill Member
									Calcitic facies	Dolomitic facies	Total			
Bluff Creek	BC							2+	260	0	260	262+	262+	18+
Calf Creek	CA								149	3+	152+	152+	152+	5+
Camp San Saba	SS					9+	114	94	299	0	299	516+	516+	76+
Carter Ranch	CR	338	239	40	617	27	136	160	75+		75+	398+	1015+	
Cold Creek	CC			47-	47-	28+	128	140	74+		74+	370+	417+	
Everett Ranch—Point Peak	EP		14+	28	42+	22	171	198	132	61	193	584	626+	10+
Goodrich Ranch	GR	244+	179	42	465+	12	141	147	42	125+	167+	468+	933+	
James River, downstream	JRD		225+	55	280+								280+	
James River, upstream	JRU			57	57+	20	127	188	284	0	284	619	676+	19+
Klett-Walker	KW	0	98	31	129	12	126	25	0	121+	121+	284+	413+	
Leon Creek	LC						40+	71	253+	0	253+	364+	364+	152.5+
Lion Mountain	LM			49	49+	13						13+	62+	
Little Llano River	LL	363	174	61	598	27	121	139	46+		46+	333+	931+	
Morgan Creek	MC	340	204	47	591	15	130	114	59	169+	228+	487+	1078+	
Pontotoc	P	470	170	26+	666+	9+						9+	675+	
Riley Mountains**	RM	330	411	33	774	16	113	214	114	73	217	560	1334	250
Slick Mountains	SM	286	177	57	520	18	102+					120+	640+	
Squaw Creek	SC		14+	69	83+	22	3+					25+	108+	
Streeter	ST	116+	273	29	418+	22	141					163+	581+	
Tanyard	T		3+	35	38+	19	131	136	47	277	324	610	648+	202
Taylor Ranch	TR		165	50	215+	25	126	77+				228+	443+	
Threadgill Creek	TC	364	418	78	860	23	142	154	281	0	281	600	1460	280+
White Creek	WC	276	497	41	814	11	143	111	0	56+	56+	421+	1235+	

*Measured in feet.
**Composed of the East Canyon, EC, and Moore Hollow, MH, sections.

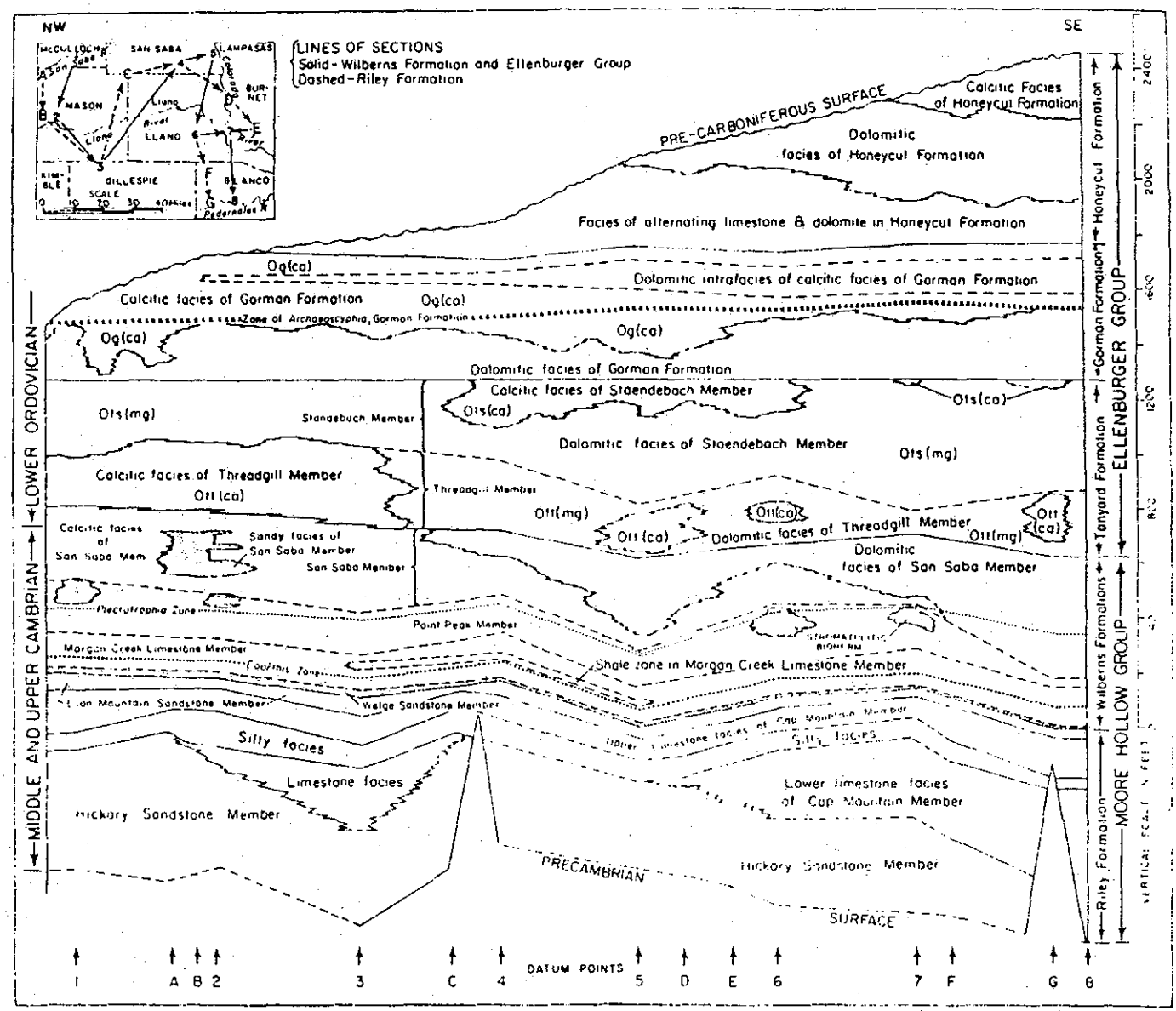

Figure 1. Diagrammatic representation of Moore Hollow Group rocks in Central Texas.

PART 2--SURFACE STRATIGRAPHIC DATA

The description of measured sections, thin-section descriptions, heavy mineral data, insoluble residue data, and fossil lists included in Part 2 furnish the basis for most of the discussion in Part 1 of "The Moore Hollow Group of Central Texas," Bureau of Economic Geology Report of Investigations No. 88 by V. E. Barnes and W. C. Bell. Figure 14 shows the location of described sections and wells. Stratigraphic data are given in Table 1.

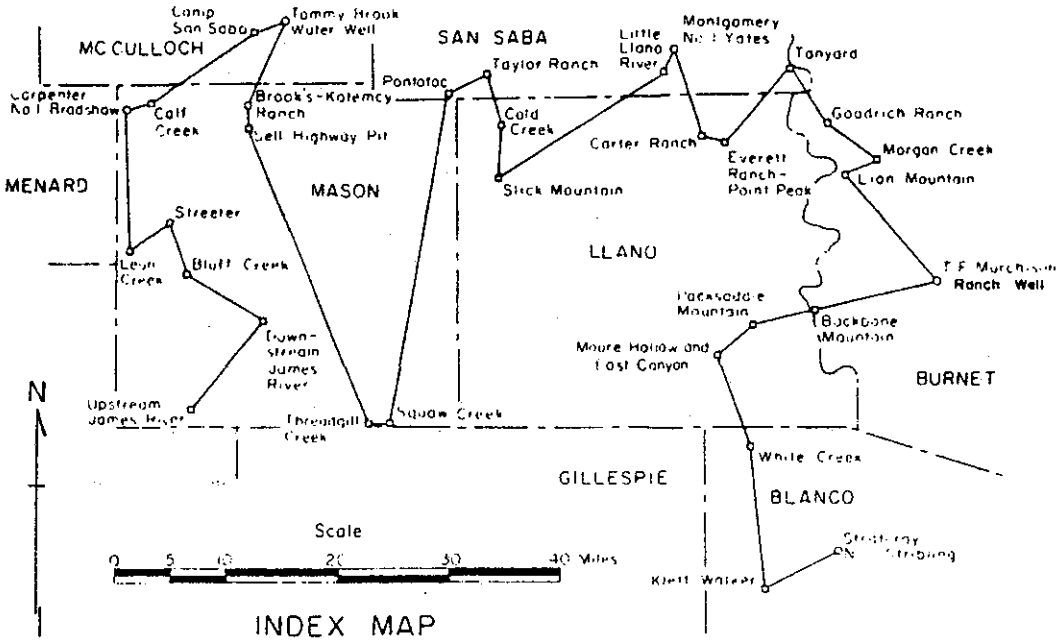

Figure 14. Index map showing locations of described sections and wells used in preparing "Correlation of Moore Hollow Group rocks in Central Texas," lifted from plate 2 in Part 1.

James River Area, Mason County, Texas

Upstream James River Stratigraphic Section

The upstream James River section in southwestern Mason County extends along the James River for 3.5 miles and includes rocks from near or at the base of the Lion Mountain Sandstone Member of the Riley Formation to the lower part of the Threadgill Member of the Tanyard Formation, Ellenburger Group. The Point Peak Member and Lion Mountain Sandstone Member are exceptionally well exposed; the rest of the section is also well displayed.

For most of the Cambrian sections in the Llano region, Bell updated the original fossil lists, but in the upstream James River section, except for collections between 120 and 125 feet, this was not accomplished. Bell's original lists, although not greatly different from the updated ones in other sections, should be cross-checked against Longacre (1970) for trilobite species above the base of the *Eoorthis* Bed. For each species treated, Longacre lists each section and each footage in the section at which the species occurs.

The upstream James River section was laid off in 5-foot intervals by Barnes during April 1949, while Walker chip-sampled it. The area about the section was mapped by Barnes during April and September 1949 and February 1950. Ellinwood collected fossils from the Wilberns part of the section during the 1949-1950 field season. Because of a number of small faults, the section is composite; but, in general, little difficulty was found in matching beds across faults. The longest shift, slightly more than a mile, was made using the *Eoorthis* Bed.

Thicknesses of various units in the upstream James River section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Ellenburger Group (19 feet measured)		
Tanyard Formation (19 feet measured)		
Threadgill Member (19 feet measured)		
Calcitic facies	19+	676-695
Moore Hollow Group (676 feet measured)		
Wilberns Formation (619 feet)		
San Saba Member (284 feet)		
Calcitic facies	284	392-676
Point Peak Member	188	204-392
Morgan Creek Limestone Member	127	77-204
Welge Sandstone Member	20	57-77
Riley Formation (57 feet measured)		
Lion Mountain Sandstone Member	57	0-57

The top of the section is seven-eighths of a mile northeast of the mouth of Little Devils River, 1 mile east of the Harper-Mason road, about 800 feet southeast of Garden Spring, and about 300 feet south of James River along the east side of a short drain. The bottom of the section, probably at the base of the Lion Mountain Sandstone Member, is in the bed of James River at a fence crossing about 800 feet downstream from the mouth of Pole Pen Hollow (Part 1, Pl. 8, fig. 1).

Description of Section

Description	Thickness in feet Interval	Cumulative	Feet above base
Ellenburger Group: 19 feet described			
Tanyard Formation: 19 feet described			
Threadgill Member: 19 feet described			
Calcitic facies: 19 feet described			
1. Limestone--mostly aphanitic, some very fine- to fine-grained; light yellowish-gray, weathers light gray with a yellowish cast; silty; silt is mostly feldspar both detrital and authigenic, the former weathered and with overgrowths, a few rhombs, some quartz; glauconite grains, scarce; beds 2 to 10 inches.	4	4	691 - 695
2. Dolomite--fine-grained; pale yellowish-brown, weathers light brown; essentially one bed.	2	6	689 - 691
3. Limestone--aphanitic; light-gray mottled by darker shades of gray and yellowish-gray, weathers yellowish-gray; burrows and trails mostly dolomitized, dolomite fine-grained, pale yellowish-orange; silty; silt mostly feldspar both detrital and authigenic, the former weathered and with overgrowths, some quartz; very small glauconite grains, scarce; beds 2 to 10 inches.	13	19	676 - 689
Gastropods common on bedding surfaces.			

Located at the top of the Wilberns Formation in this section is the highest occurrence of coarse glauconite. This horizon is also approximately the dividing plane between predominantly granular limestone below and aphanitic limestone above. In mapping, the lowest occurrence of easily seen Ordovician gastropods was useful in localizing the boundary.

Description	Thickness in feet Interval	Cumulative	Feet above base
Moore Hollow Group: 676 feet described			
Wilberns Formation: 619 feet thick			
San Saba Member: 284 feet thick			
Calcitic facies: 284 feet thick			
4. Limestone--aphanitic- to fine-grained; two shades of yellowish-gray, weathers similar to above; in part intraclastic, aphanitic granules in a fine-grained matrix; slightly dolomitic, mostly as burrow replacement; silty; silt is mostly feldspar both detrital and authigenic, the former much weathered, some overgrowth, quartz scarce.	19	38	657 - 676
From 657 to 665 feet, fine- to very fine-grained, much burrowed, massive, wavy bedding, nodular where weathered; beds mostly less than 4 inches; from 665 to 672 feet, very fine-grained to aphanitic, nodular; beds average about 1 inch, poorly exposed; from 672 to 676 feet, very fine- to fine-grained, slightly glauconitic except top 4-inch bed which contains much coarse glauconite; beds 4 to 6 inches.			
Lytospira and other Ordovician-type gastropods at 673.5 feet. Fossils collected from 673 feet, *Symphysurina* sp. and *Apheoorthis* sp.; from 673.5 feet, *Lytospira* sp.			
SHIFT northeastward about 150 feet from drain along top of 18-inch dolomite bed; continue down in section northward.			
5. Limestone and dolomite--limestone, fine- to coarse-grained; mostly light- to medium-gray; glauconitic and dolomitic throughout, poorly exposed; dolomite, an 18-inch bed	14	52	643 - 657

Description	Thickness in feet Interval	Cumulative	Feet above base
at top of interval; very fine-grained; pale to dark yellowish-orange, weathers dark yellowish-brown; silty; silt mostly contains much weathered detrital feldspar, some overgrowth, some quartz; very fine sand in lower 2 feet similar to silt in composition except more of it is authigenic feldspar, numerous rhombs.			
From 643 to 646 feet, fine-grained; nodular weathering, slightly glauconitic; beds 1 to 4 inches; from 646 to 646.7 feet, coarse-grained, very fossiliferous; from 646.7 to 655.5 feet, fine-grained, glauconitic; beds mostly 1 inch or less up to 4 inches, nodular.			
Numerous trilobites and gastropods from 646 to 646.7 feet. Fossils collected from 645 feet, Symphysurina sp. and Sinuopea sweeti (Whitfield); from 646 and 647 feet, Symphysurina sp. and gastropods.			
6. Covered.	3	55	640 - 643
SHIFT downstream along top of sandstone bed about 350 feet across small fault; continue down in section northeastward.			
Fossils collected from 641 feet, Symphysurina sp., Symphysurina bubops Winston and Nicholls, and conodonts.			
7. Sandstone--fine- to coarse-grained; dark yellowish-orange to moderate yellowish-brown; grains rounded, frosted, poorly sorted; very calcitic; slightly dolomitic; silty; massive, upper 10 feet poorly exposed in line of section, well exposed north of river where sampled.	12	67	628 - 640
8. Limestone and covered--medium- to coarse-grained; greenish-gray;	13	80	615 - 628

	Description	Thickness in feet Interval	Cumulative	Feet above base
	Glauconitic; dolomitic; dolomite dark yellowish-orange; residue mostly medium sand and limonitic clay; 6- to 8-inch beds at 619 and 623 feet, poorly exposed, probably thin-bedded as indicated by a screen of thin platy fragments. Fossils collected from 622 feet, Symphysurina sp. and Apheoorthis ornata Ulrich and Cooper.			
9.	Limestone--fine-grained; light olive-gray; some dolomite, yellowish-orange; slightly silty, argillaceous, and glauconitic. From 599 to 600 feet, thin-bedded, nodular; from 600 to 600.5 feet, one bed; from 600.5 to 602 feet, thin-bedded, nocular, poorly exposed; from 602 to 603 feet, intraformational conglomerate with fine-grained pebbles in fine- to medium-grained matrix, one bed; from 603 to 605 feet, thin-bedded, some greenish-gray clay films; from 605 to 607.5 feet, beds mostly 1 to 6 inches, two intraformational conglomerate beds with very fine-grained pebbles in slightly coarser matrix; from 607.5 to 610 feet, beds mostly less than an inch; from 610 to 615 feet, beds 4 to 12 inches. Fossils collected from 602 feet, conodonts; from 614 feet, Symphysurina bubops Winston and Nicholls, linguloid brachiopod, and conodonts.	16	96	599 - 615
10.	Covered--except for a few thin, very fine-grained limestone beds. Fossils collected from 597 feet, Missisquoia typicalis Shaw, Highgatella sp., and conodonts.	3	99	596 - 599
11.	Sandstone--fine- to medium-grained; yellowish-gray, white, and pinkish-gray; grains subrounded, frosted; very calcitic and dolomitic; beds 0.5 to 2 feet.	5	104	591 - 596

Description	Thickness in feet Interval	Cumulative	Feet above base
12. Dolomite--very fine-grained; pale yellowish-orange, light-brown, grayish-orange, and pale yellowish-brown; sandy and silty; sand very fine to medium, subrounded, frosted, slightly reconstituted, most abundant in lower and upper samples, mostly quartz; silt is mostly detrital feldspar with some overgrowth, some quartz; a few thin beds weather in relief.	21	125	570 - 591
SHIFT about 50 feet across disturbed zone; continue down in section along bluff, then downstream to fence.			
13. Sandstone--fine- to coarse-grained, very pale orange to moderate reddish-orange to brownish-orange and pale yellowish-orange; very calcitic; grains poorly sorted, subrounded, frosted, slightly reconstituted; indistinctly bedded, beds 0.5 foot to several feet. Limestone at 555 feet, a 2-inch (fine-grained) bed.	21	146	549 - 570
14. Limestone--lower half, medium- to coarse-grained; mottled, greenish-gray to light olive-gray, top bed grayish-orange; glauconitic; slightly sandy and silty; in part oolitic; stylolites abundant; trilobitic. Upper half, fine-grained; pale yellowish-brown, a few beds pale to dark yellowish-orange; silty; some very fine sand; nonglauconitic; argillaceous, shale films between beds in lower part; beds in lower 3 feet mostly less than an inch thick, somewhat thicker above, recessive.	9	155	540 - 549
Fossils collected from 542 feet, *Corbinia apopsis* Winston and Nicholls and *Leiobienvillia leonensis* Winston and Nicholls; from 543 feet, *Corbinia apopsis* Winston and Nicholls and *Leiobienvillia leonensis* Winston and Nicholls; from 545 feet, *Corbinia apopsis* Winston and Nicholls.			

Description	Thickness in feet Interval	Cumulative	Feet above base
SHIFT around point of cliff about 100 feet along hyolithid(?) bed; continue down in section to drain bottom.			
15. Limestone--fine- to coarse-grained; light olive-gray, pale to dark yellowish-orange and greenish-gray, in part mottled; slightly glauconitic; very little silt and sand in top two samples, much silt and sand in lower two samples, silt and very fine sand, mostly detrital feldspar, some overgrowth, a few rhombs, some quartz; fossiliferous.	20	175	520 - 540

From 520 to 528 feet, fine-grained, a few medium- to coarse-grained beds; fossiliferous; lower 5 feet and upper 1.5 feet very silty, slightly micaceous, shale films between beds; fissile to 2-inch beds, remaining beds thicker; from 528 to 532.5 feet, coarse-grained, somewhat oolitic, beds 4 to 10 inches; fossiliferous; from 532.5 to 533.5 feet, fine-grained, thin-bedded, argillaceous; from 533.5 to 540 feet, mostly coarse-grained, beds mostly 4 to 12 inches; very fossiliferous.

Fossils are Owenella in upper part; trilobites abundant in many beds; in top foot hyolithids (?) about 0.5 inch long, and along strike ancestral(?) Lytospira(?).

Fossils collected from 521.5 feet, Briscoia llanoensis Winston and Nicholls, Calvinella tenuisculpta Walcott, Euptychaspis kirki Kobayashi, Macronoda prima Lochman, Saukiella serotina Longacre, Stenopilus latus Ulrich, Idiomesus levisensis Rasetti, and trilobite gen. and sp. undet.; from 529 feet, Macronoda prima Lochman, Saukiella serotina Longacre, Eurekia eos (Hall), Plethometopus convergens

Description	Thickness in feet Interval	Cumulative	Feet above base
(Raymond), Idiomesus levisensis Rasetti, Calvinella prethoparia Longacre, Euptychaspis kirki Kobayashi, Briscoia llanoensis Winston and Nicholls, Stenopilus latus Ulrich; from 532 feet, Euptychaspis kirki Kobayashi, Eurekia eos (Hall), Bayfieldia simata Winston and Nicholls, Briscoia llanoensis Winston and Nicholls, Idiomesus levisensis Rasetti, Plethometopus convergens (Raymond), and Euptychaspis jugalis Winston and Nicholls; from 536 feet, Kygmaeoceras cf. K. perplexum Flower, Euptychaspis jugalis Winston and Nicholls, Bayfieldia simata Winston and Nicholls, Calvinella prethoparia Longacre, Saukiella serotina Longacre, Euptychaspis kirki Kobayashi, Keithiella patula Winston and Nicholls, Owenella sp., and Sinuella? sp.; from 538 feet, Corbinia apopsis Winston and Nicholls and Acheilops masonensis Winston and Nicholls; from 539 feet, Triarthropsis cf. limbata Rasetti, Plethometopus obtusus Rasetti, Corbinia apopsis Winston and Nicholls, Idiomesus levisensis Rasetti, Leiobienvillia leonensis Winston and Nicholls, Acheilops sp., and gastropod gen. and sp. undet.; from 539.5 feet, Corbinia apopsis Winston and Nicholls; from 540 feet, Corbinia apopsis Winston and Nicholls, Finkelnburgia finkelnburgi (Walcott), Idiomesus levisensis Rasetti, Plethometopus obtusus Rasetti, Leiobienvillia leonensis Winston and Nicholls, Triarthropsis nitida Ulrich, Triarthropsis cf. T. limbata Rasetti, Nanorthis hambergensis (Walcott), Acheilops sp., and gastropod gen. and sp. undet.			
SHIFT downstream about 500 feet; continue down in section down bluff. The shift actually was made using the hyolithid(?) bed at 540 feet; perhaps a foot of section was gained during the shift.			
16. Limestone and covered--coarse-grained; pale yellowish-brown; in part oolitic, slightly sandy and silty, glauconitic; beds average about 6 inches; about half covered.	4	179	516 - 520

Description	Thickness in feet Interval	Cumulative	Feet above base
Fossils collected from 519 feet, *Bayfieldia simata* Winston and Nicholls, *Calvinella tenuisculpta* Walcott, and *Nanorthis hambergensis* (Walcott). *Owenella* sp. noted in interval by Barnes.			
17. Sandstone--fine- to medium-grained; white to pale brown; very calcitic, more so toward top; grains subrounded, slightly frosted; essentially one massive bed, numerous cross bed sets usually less than 6-inches thick.	6	185	510 - 516
Fossils collected from 514 feet, *Apheoorthis* sp.			
18. Limestone--fine-grained; moderate yellowish-brown to pale yellowish-brown in lower part, upward mottled by streaks and patches of pale reddish-brown and light-brown; very silty, sandy, and dolomitic; very slightly glauconitic; in fresh exposures, beds indistinct except for cross beds, where weathered beds measure 6 inches or less.	18	203	492 - 510
SHIFT downstream about 900 feet across prominent drain; continue down in section down cliff. The hyolithid(?) bed at 540 feet was used as a check in making the shift.			
19. Limestone--medium- to coarse-grained; pale yellowish-orange; sparsely glauconitic; in part silty and sandy, silt and fine sand mostly feldspar both detrital and authigenic; the latter occurs as overgrowths and rhombs.	19	222	473 - 492
From 473 to 477 feet, massive, some lenticular sets of cross beds, silty, sandy; from 477 to 490 feet, nodular, mostly thin-bedded, sandy below 480 feet, silty above, burrows and trails abundant, trilobitic beds			

Description	Thickness in feet Interval	Cumulative	Feet above base
not burrowed, circular 0.25-inch grooves, 4 to 5 inches in diameter, two of which are concentric, on under side of bed at 477 feet may be burrows; from 490 to 492 feet, coarse-grained, sandy, one bed. Fossils collected from 479 feet, Saukiella junia (Walcott), var. B. Winston and Nicholls, Euptychaspis typicalis Ulrich, and saukid tail gen. and sp. undet.; from 481 feet, Euptychaspis typicalis Ulrich, Saukia tumida Ulrich and Resser, Stenopilus latus Ulrich, and Bayfieldia simata var. A. Winston and Nicholls; from 484 feet, Saukia imperatrix Ulrich and Resser and Bayfieldia simata Winston and Micholls; from 492 feet, Saukia imperatrix Ulrich and Resser.			
SHIFT eastward about 125 feet along coarse-grained, glauconite bed; continue down in section to foot of bluff, then downstream to prominent drain.			
20. Limestone--fine-, medium-, and coarse-grained; glauconitic to very slightly glauconitic; silty and sandy throughout; from 417 to 442 feet, much very fine sand and silt; from 442 to 453 feet, much fine to medium sand, silt scarce; from 453 to 473 feet, much silt and very fine to medium sand, a few coarse grains throughout; above 445 feet, sand and silt in part aggregated; fine and very fine sand and silt mostly feldspar both detrital with some overgrowth and authigenic, a few rhombs, quartz common, muscovite and zircon scarce; medium and coarse sand all quartz. From 417 to 422 feet, mostly coarse, some medium-grained, greenish-gray to light olive-gray, in part mottled; from 422 to 424 feet, fine-grained, pale yellowish-brown to moderate yellowish-brown; from 424 to 426 feet, medium-	56	278	417 - 473

Description	Thickness in feet Interval	Cumulative	Feet above base
to coarse-grained, mostly light olive-gray; from 426 to 430.5 feet, fine-grained, light olive-gray to greenish-gray; from 430.5 to 431 feet, coarse-grained, pale yellowish-brown; from 431 to 437 feet, fine-grained, mostly light olive-gray; from 437 to 439 feet, medium-grained, grayish-orange; from 439 to 440 feet, fine-grained, light olive-gray; from 440 to 442 feet, medium- to coarse-grained, grayish-orange; from 442 to 444 feet, fine- to medium-grained, grayish-orange; from 444 to 446 feet, covered; from 446 to 453 feet, fine-grained, dark yellowish-orange; from 453 to 454 feet, coarse-grained, yellowish-gray, trilobitic; from 454 to 456.5 feet, fine- to medium-grained, light olive-gray and pale yellowish-orange; from 456.5 to 462 feet, fine-grained, mostly pale yellowish-orange, argillaceous, much disturbed and burrowed, nodular, thin-bedded, recessive, some cross-beds in upper part; from 462 to 473 feet, mostly fine-grained, pale yellowish-orange, sandy, silty, burrows and trails scarce, in upper part some coarse-grained, very glauconitic, beds irregular to lenticular and crossbedded.			
From 456.5 to 473 feet, fresh rock exposed and bedding distinct; below this level a coating of gray caliche partly masks bedding features.			
Fossils collected from 450 feet, *Saukiella pepinensis*? (Owen), from 453 feet, *Idiomesus levisensis* Rasetti, and *Saukiella pepinensis* (Owen); from 459 feet, *Saukiella pepinensis* (Owen) and *Bayfieldia binodosa* (Hall); from 460 feet, *Saukiella pepinensis* (Owen), *Stenopilus latus* Ulrich, and *Idiomesus levisensis* Rasetti.			
21. Limestone--mostly fine- to medium-grained; pale orange to moderate yellowish-brown; glauconite scarce; argillaceous, beds mostly less than an inch; one coarse-grained bed from 412 to 413 feet, greenish-gray and	5	283	412 - 417

	Description	Thickness in feet Interval	Cumulative	Feet above base
	light olive-gray, mottled, very glauconitic. Thin sectioned at 413 feet. Limestone--trilobite fragments, some secondarily enlarged pelmatozoan debris, gastropods, and hyolithids(?) in an aphanitic to microgranular matrix; fossil fillings aphanitic, in part silty, many partly to entirely replaced by dolomite; dolomite 0.05 to 0.25 mm, also replaces fossil debris and matrix, in part altered to calcite and yellowish-orange interstitial limonite; silt mostly authigenic feldspar; glauconite scarce, mostly coats fossil fillings, a few rounded grains, mostly weathered.			
22.	Limestone and shale--shale mostly very glauconitic, calcareous, thin-bedded. Limestone coarse-grained; various reds, greens, and browns; silty; much cross-bedded; in part friable; harder parts mostly trilobite coquinite. From 402 to 404.5 feet, limestone, moderate yellowish-brown, glauconitic, crossbedded; from 404.5 to 405 feet, purplish shale; from 405 to 408.5 feet, limestone, olive-gray, weathers reddish, two prominent ripple-marked beds best exposed in river, the upper one with crests 4 feet apart, trend N. 80°W.; from 408.5 to 409.5 feet, intraformational conglomerate, greensand, and shale; from 409.5 to 412 feet, limestone, coarse-grained, olive-gray, glauconitic, cross-bedded. Thin sectioned at 412 feet. Dolomite--very calcitic and glauconitic, a few trilobite fragments; calcite mostly secondarily enlarged pelmatozoan debris in part replaced by dolomite; dolomite mostly very fine- to medium-grained, some coarse and very coarse-grained, a few medium sand grains; glauconite exceptionally free of calcite; some rounded	10	293	402 - 412

Description	Thickness in feet Interval	Cumulative	Feet above base
grains 0.3 to 0.8 mm, many smaller fragments, most grains borken, in part interstitial, invades pelmatozoan debris, many grains enveloped by a thin layer of ordered glauconite which is pleochroic in green and yellowish-green; extinction follows curvature as stage is rotated. Fossils collected from 406.5 feet, Saukiella pyrene (Walcott).			
23. Limestone--coarse-grained; pale brown to greenish-gray; glauconitic; oolitic; lenses of dolomite up to 2 feet in length common; dark grayish-yellow, dolomite rhombs abundant; a 4-inch intraformational conglomerate at bottom of interval, another at about 395 feet; fossiliferous; massive, beds about 3 feet thick; stylolites abundant. Thin sectioned at 398 feet. Limestone--abundant trilobite debris, a few gastropods, a few ooids, some dolomite, and a little glauconite mostly in an aphanitic matrix, in part, in very fine- to coarse-grained, clear, secondary calcite added to pelmatozoan debris; some calcite radial to trilobite fragments; pelmatozoan debris abraded to spheres, mostly replaced by dolomite possibly before spheres formed; gastropod fillings argillaceous, densely aphanitic, in part dolomitic, shell mostly missing, in a few places preserved as a minute, clear calcite mosaic; glauconite fragmental; dolomite, 0.05 to 0.25 mm, mostly replaces fossil debris and fossil fillings, also occurs as irregular masses, rhombs mostly bounded by thin limonitic films; ooids 0.15 mm, radial structure, fossil fragments at center. Fossils collected from 394 feet. Keithiella scapane Longacre, Saukiella pyrene (Walcott), Bayfieldia binodosa (Hall), Briscoia or dikelocephalid, and Billingsella sp.	10	303	392 - 402

Description	Thickness in feet Interval	Cumulative	Feet above base
Note: 1 foot was inadvertently dropped from section between 392 and 395 feet.			
Point Peak Member: 188 feet thick			
24. Limestone and siltstone--limestone mostly fine- to medium-grained, some coarse-grained; mostly greenish-gray, some yellowish-orange; trails and burrows abundant; intraformational conglomerate common; slightly glauconitic; silty and sandy, sand mostly fine or very fine, sand and silt mostly feldspar, both detrital and authigenic, the latter occurs as overgrowths and rhombs, some quartz, mica scarce; beds a small fraction of an inch to 4 inches, nodular. Siltstone mostly argillaceous films between limestone beds.	26	329	366 - 392
From 366 to 377 feet, fine- to medium-grained, uniformly thin-bedded, trilobitic; from 377 to 386.5 and from 389.5 to 391 feet, about 20-percent siltstone interbedded with fine- to medium-grained limestone and intraformational conglomerate beds up to 4 inches thick, recessive; from 386.5 to 389.5 feet, similar except less siltstone; top foot indurated siltstone.			
Thin sectioned at 380 and 384 feet. At 380 feet, limestone--intraformational conglomerate, pebbles microgranular to very fine-grained, pelleted, silty, glauconitic, dolomitic, much finely comminuted fossil debris including phosphatic brachiopod fragments; one pebble contains aphanitic intraclasts; matrix with much trilobite and some calcareous brachiopod debris, and some silt and dolomite, fine- to coarse-grained, clear, secondary calcite added to pelmatozoan debris; silt mostly feldspar, authigenic to detrital, much quartz, some black opaque minerals; dolomite rhombs in pebbles, about 0.05 mm, in			

Description	Thickness in feet Interval	Cumulative	Feet above base
matrix about 0.25 mm, some with zonal limonite stain. At 384 feet, siltstone and limestone--siltstone very calcitic, glauconitic, argillaceous, slightly micaceous; limestone microgranular, pelleted, glauconitic, silty, slightly micaceous, some pelmatozoan debris, one dolomite intraclast, rhombs 0.05 to 0.3 mm, abundant interstitial limonite; glauconite fragmental; silt, mostly feldspar, authigenic to detrital, some quartz. Fossils collected from 369.5 feet, Illaenurus quadratus Hall, Keithiella scapane Longacre, Euptychaspis frontalis Longacre, Bayfieldia binodosa (Hall), and Idiomesus levisensis Rasetti; from 374.5 feet, Illaenurus quadratus Hall, Eurekia granulosa Walcott, Billingsella(?) sp.			
SHIFT downstream about 300 feet along intraformational conglomerate at 392 feet, remeasure down to 366 feet, continue down in section to river level.			
25. Limestone and siltstone--limestone mostly fine-grained, a few coarse-grained beds contain glauconite; greenish-gray; nodular, thin-bedded, no bed over 6 inches. Siltstone forms films between limestone beds. Some residue, mostly clay and silt, some very fine sand and glauconite; silt and sand mostly feldspar. From 357 to 360 feet, fine- to coarse-coarse-grained, trails and burrows common, thin-bedded, nodular; from 360 to 364 feet, fine-grained, exposed in river bed; from 364 to 366 feet, fine-grained, shaly-bedded in lower part, distinctly nodular, thin-bedded. Fossils collected from 357 feet, Illaenurus quadratus Hall, Monocheilus truncatus Ellinwood, Bayfieldia binodosa (Hall), Euptychaspis jugalis Winston and Nicholls, Owenella sp., and Billingsella sp.	9	338	357 - 366

Description	Thickness in feet Interval	Cumulative	Feet above base
SHIFT eastward about 100 feet across disturbed zone; shift made by matching trilobitic and oolitic beds; continue down in section along river bank.			
26. Limestone and siltstone--limestone mostly fine-grained, some coarse-grained beds contain coarse glauconite; much burrowed, trails common on 0.25-inch beds; a 4-inch oolitic bed at 353 feet; a 2-inch trilobite coquinite bed at 357 feet; girvanella at 349 feet; silty and sandy, sand very fine, silt and sand mostly rhombs of feldspar; mica common both hydrobiotite and muscovite; zircon scarce; thin-bedded, no bed over 6 inches. Siltstone forms films between limestone beds.	12	350	345 - 357
Thin sectioned at 348 feet. Limestone--much trilobite debris, and some glauconite and silt in part fine- to medium-grained, secondary calcite added to pelmatozoan debris, in part in a pelleted, silty, microgranular calcite matrix; glauconite abundant, rounded to lobate, some admixed calcite in glauconite in microgranular part, in part weathered dark brown, opaque; dolomite, 0.05 to 0.15 mm, mostly replaces matrix, encroaches slightly on trilobite debris; some limonitic stain; a few fossil fillings densely aphanitic, argillaceous; a few indistinct stylolites.			
Fossils collected from 347 feet, Illaenurus quadratus Hall; from 351 feet, Monocheilus truncatus Ellinwood, Saukiella fallax (Walcott), and Kiethia connexa Rasetti; from 354 feet, Saukiella fallax (Walcott), Eurekia granulosa (Walcott), and gastropod gen. and sp. undet.			
27. Limestone and siltstone--limestone fine- to coarse-grained; greenish-gray to light olive-gray, mostly glauconitic, mica common especially in recessive zones, some silt and	10	360	335 - 345

Description	Thickness in feet Interval	Cumulative	Feet above base
very fine sand similar to above, an occasional ooid in lower part, fossiliferous especially coarse-grained beds. Siltstone mostly films between limestone beds, may be more abundant in poorly exposed lower part of interval. From 335 to 335.5 feet, fine-grained, girvanella-bearing; from 335.5 to 338 feet, mostly fine-grained, argillaceous, one coarse-grained bed, recessive; from 338 to 338.5 feet, fine- to medium-grained, burrowed; from 338.5 to 339 feet, argillaceous, thin-bedded, recessive; from 339 to 339.5 feet, medium-grained, burrowed; from 339.5 to 340 feet, argillaceous, thin-bedded, recessive; from 340 to 340.5 feet, lower part fine- to medium-grained, burrowed, upper part coarse-grained, contains coarse glauconite; from 340.5 to 343 feet, fine-grained, argillaceous, a few thin, coarse-grained, fossiliferous beds, recessive; from 343 to 343.5 feet, fine- to medium-grained, burrowed; from 343.5 to 344 feet, argillaceous, thin-bedded, recessive; from 344 to 345 feet, fine- to coarse-grained, burrowed.			
28. Limestone--medium- to coarse-grained; yellowish-gray to light olive-gray, in part with a greenish case; slightly silty, some very fine sand, sand and silt mostly feldspar; hydrobiotite common, some muscovite; some glauconite; mostly thick-bedded. From 318 to 319.5 feet, coarse-grained, brownish-yellow ooids and other irregularly shaped dolomitized objects common, nonglauconitic, on upper surface ripple marks about 1.5 feet between crests, trend N.45°W.; from 319.5 to 320 feet, argillaceous, recessive; from 320 to 321 feet, coarse-grained, ripple-marked, 3 feet between crests, lenticular-bedded; from 321 to 322 feet, medium-grained, a few girvanella, thin-bedded,	17	377	318 - 335

Description	Thickness in feet Interval	Cumulative	Feet above base
nodular; from 322 to 325 feet, fine- to coarse-grained, beds up to 6 inches, a thin-bedded, argillaceous, nodular zone near middle; from 325 to 335 feet, fine- to medium-grained, sparsely glauconitic, burrows and trails numerous, those in upper part dolomitized, yellowish-orange, weather faster than matrix, many girvanella in upper few feet.			
A 100- by 300-foot stromatolitic bioherm about 5 feet thick, adjacent to section, parts the beds at about 325 feet, the beds below this level go beneath and those above go over the bioherm. The bioherm is composed of rounded, slightly domed, stromatolitic masses about 15 feet across with poorly defined septae between the domes. Each dome is composed of stromatolites 1 to 3 feet in size separated by distinct septae. Within each stromatolite, irregular 2- to 3-inch, yellowish-orange, dolomitized areas are surrounded by stromatolitic limestone. The septae contain numerous branching, white, calcite objects up to 0.25 inch in diameter by 2 inches in length; gastropod whorls and girvanella are scarce.			
Thin sectioned at 319 and 329 feet. At 319 feet, limestone--intraclasts and round objects of dolomite in a microgranular to fine-grained, clear calcite mosaic, some radial calcite; intraclasts aphanitic, in part replaced by dolomite, a few contain algal threads, another is oolitic, a few are bordered by ragged, calcitic glauconite, some of the long thin ones may be finely radiate fossils which have lost their structure (a fossil similar in size and with good structure is present); round objects of dolomite may have been either dolomitized pelmatozoan debris that was then abraded, or abraded pelmatozoan debris that was replaced by dolomite as evidenced by a few that are not completely replaced, intraclasts may also be replaced;			

Description	Thickness in feet Interval	Cumulative	Feet above base
dolomite, 0.05 to 0.1 mm, in part slightly limonite-stained. At 329 feet, limestone--many densely aphanitic bodies, a few finely radiate fossils, and much trilobite debris in clear secondary calcite added to pelmatozoan debris; the densely aphanitic bodies, up to 0.5 mm long, may be finely radiate fossils which have collapsed or otherwise lost most of their structure; if this is not their origin, then they may be intraclasts or even more unlikely, pellets; scattered clusters of dolomite rhombs, 0.05 to 0.15 mm; some limonitic stain; silt, glauconite, and mica very scarce.			
Many hexactinellid spicules at 325 feet.			
29. Siltstone, shale and limestone--mostly siltstone greenish-gray, calcitic, glauconitic, argillaceous, micaceous, mica mostly biotite, silt and very fine sand mostly feldspar, mostly as rhombs, beds 0.25 inch separated by shale films; 4-inch limestone intraformational conglomerate beds at both top and bottom of interval.	3	380	315 - 318
SHIFT downstream past drain about 300 feet; continue down in section along foot of bluff.			
30. Siltstone, limestone and shale--siltstone calcitic, common from 300 to 310 feet, rest is mostly very fine grained, very silty, calcitic, argillaceous sandstone; silt and sand mostly feldspar both detrital and authigenic, rhombs very numerous, rest, perhaps 10 percent, mostly quartz, glauconite, and mica; mica mostly hematitic; in hydrochloric acid residue, hematite is seen to be in a colorless, isotropic material having an index of refraction between 1.520 and 1.534; a few silicified brachio-	50	430	265 - 315

Description	Thickness in feet Interval	Cumulative	Feet above base
pods between 280 and 285 feet; trails common on some beds; beds about 0.05 to 3 inches separated by green shale films. Limestone resting on intraformational conglomerate at 286 feet; coarse-grained; glauconitic; ripple-marked, 4.5 to 5 feet between crests, trend about N. 80 E.; overlying siltstone conforms to ripples; a 2- to 8-inch bed. Argillaceous limestone from 268 to 270 feet, nodular, much reworked.			
Intraformational conglomerate beds, in part lenticular, numerous as follows: at 266, 268, 269, and 270 feet, 2-inch beds; from 272 to 273 and 274.5 to 275.5 feet; from 277.5 to 281 feet, 6 beds; from 281 to 282 and 283 to 286 feet, with thin shale partings; from 290 to 291 feet, 2 beds separated by siltstone; from 294.5 to 295 feet; at 297 feet, a 3-inch bed; from 298 to 299 feet, 2 beds separated by a thin siltstone bed; at 301 feet, a 1- to 4-inch bed; at 302 feet, a 2-inch bed; from 303.5 to 308 feet, at least 7 beds separated by siltstone; from 314 to 315 feet, one bed that thickens laterally to as much as 1.5 feet.			
Thin sectioned at 265, 312, and 314.5 feet. At 265 feet, siltstone and limestone--a 0.3-inch limestone bed between zones of siltstone or very silty limestone; beds in lower zone truncated; siltstone composed mostly of calcite on border of aphanitic and microgranular; argillaceous, micaceous, slightly glauconitic; mica mostly weathered, hematitic, nearly opaque, some hydrobiotite, chlorite(?), and muscovite, the latter possibly altered from hydrobiotite. Limestone mostly trilobite debris with a small amount of radial calcite, a few intraclasts, some dolomite, glauconite scarce in clear calcite, fine- to medium-grained, secondary calcite added to pelmatozoan			

Description	Thickness in feet Interval	Cumulative	Feet above base
debris; intraclasts in part aphanitic calcite with little extraneous material to very glauconitic and slightly silty, in part replaced by 0.05- to 0.1-mm dolomite; similar dolomite in fossil cavities and slightly larger rhombs in matrix, mostly slightly limonite-stained; glauconite mostly fragmental, invades pelmatozoan debris, a few grains rounded. At 312 feet, siltstone--microgranular, calcitic, glauconitic, argillaceous, micaceous, very slightly dolomitic; dolomite microgranular, replaces fossil debris, limonitic; mica mostly hydrobiotite; glauconite, 0.05 mm, mostly angular. At 314.5 feet, limestone--intraformational conglomerate, pebbles and smaller intraclasts, aphanitic to microgranular, mostly pelleted and crowded with fossil debris, some glauconite, silt, and mica, lined by clear calcite on lower side, mica mostly hydrobiotite, silt mostly feldspar; matrix contains abundant trilobite debris, a few calcareous brachiopod fragments, a few pellets and some glauconite in fine- to medium-grained mosaic of secondary calcite added to pelmatozoan debris; glauconite mostly about 0.05 mm, fragmental to rounded; dolomite 0.1 to 0.2 mm, mostly in matrix, scarce; a few finely radiate fossils.			
Chert at about 276 feet, white, abundant hexactinellid spicules and trilobite fragments, lenses up to 6 feet long; a few silicified brachiopods between 280 and 285 feet.			
Fossil at 308 feet--new genus and species of Eocrinoid?. Fossils collected from 265 feet, Dartonaspis wichitaensis (Resser); from 275 feet, Plectotrophia alata? (Walcott), and Briscoia sp.; from 282 feet, gastropods gen. and sp. undet.; from 283 feet, Briscoia sp.; from 284 feet, Prosaukia cf. P. curvicostata Ulrich and Resser,			

Description	Thickness in feet Interval	Cumulative	Feet above base
Briscoia sp., Billingsella corrugata inornata Ellinwood; from 284.5 feet, Briscoia sp., Prosaukia cf. P. curvicostata Ulrich and Resser, Idiomesus infimus Longacre, Billingsella corrugata inornata Ellinwood.			
SHIFT downstream along foot of bluff 400 feet; continue down in section along foot of bluff.			
31. Siltstone, limestone, and shale--siltstone very light olive-gray; slightly sandy, sand very fine, sand and silt mostly feldspar, many rhombs; glauconitic; muscovite common, pink hematitic mica abundant; a few black opaque minerals, in part magnetic; beds 0.05 to 3 inches separated by greenish-gray shale films; alternates with limestone intraformational conglomerate located as follows: at 255 feet; at 258.5 feet, 6-inch bed; at 260.5 feet, 2-inch bed; at 263 feet, 3-inch bed; at 264 feet, 1- to 6-inch bed. A 7-inch shale rests on intraformational conglomerate at 255 feet, green, blocky fracturing, contains flattened trilobites and small orbiculoids; from 263 to 264 feet, some greenish-gray shale, somewhat silty.	15	445	250 - 265
Fossils collected from 251 feet, Chariocephalus whitfieldi Hall; from 255 feet, Dartonaspis wichitaensis (Resser), Ellipsocephaloides silvestris Resser, Wilbernia pero (Walcott), Ellipsocephaloides sp., and gastropod gen. and sp. undet.			
SHIFT downstream about 400 feet; continue down in section along foot of bluff.			
32. Siltstone, shale, and limestone--siltstone yellowish-gray to greenish-gray and very light olive-gray, similar to above, beds about	10	455	240 - 250

Description	Thickness in feet Interval	Cumulative	Feet above base
0.05 to 3 inches separated by shale films; shale from 240 to 240.5 feet, between brownish gray and pale brown, graptolites; limestone intraformational conglomerate at 241 feet, 1-inch bed; at 242 feet, 3-inch bed; from 242.5 to 243 feet; at 245.5 feet, 2- to 6-inch bed; at 247 feet, 4-inch bed; at 249 feet, 3-inch bed; at 250 feet, about an 8-inch bed. Fossils collected from 245 feet, Chariocephalus whitfieldi Hall and Prosaukia tuberculata Ulrich and Resser. Graptolites from 240 to 240.5 feet.			
33. Siltstone, shale, and limestone--mostly siltstone and shale; siltstone similar to above, numerous trails on many bedding planes, beds less than 0.25 inch; shale in lower part of upper foot, greenish-gray, blocky to fissile; upper 6 inches intraformational conglomerate; stromatolitic bioherms from 234 to 239 feet about 10 feet in diameter, spaced 20 feet and more apart, aphanitic, light brownish-gray, rounded masses, each bioherm composed of crinkly surfaced stromatolites in 4-inch columns, scattered intraformational conglomerate pebbles in septae. Thin sectioned at 238, 239, and 240 feet. At 238 feet, limestone--aphanitic, faintly to distinctly pelleted, pellets outlined by slightly coarser, clear calcite; irregularly cloudy; slightly silty, glauconitic, and micaceous; silt mostly feldspar, some black opaque minerals; little if any indication of stromatolitic structure unless pelleting and irregular cloudiness are such an indication; very fine-grained, clear calcite mosaics may fill voids. At 239 feet, shale--silty, micaceous, slightly calcitic, glauconite scarce.	7	462	233 - 240

	Description	Thickness in feet Interval	Cumulative	Feet above base
	At 240 feet, limestone intraformational conglomerate--pebbles microgranular to aphanitic, pelleted, argillaceous, silty, micaceous, glauconitic, some trilobite and pelmatozoan debris, lower(?) side bordered by clear calcite; matrix similar to pebbles, except less argillaceous and fossil debris larger, more abundant; glauconite, 0.05 to 0.15 mm, mostly elliptical grains, some fragments; mica recognized by shape only, weathered opaque, hematitic; silt mostly feldspar.			
34.	Siltstone and shale--siltstone calcitic; argillaceous; silt mostly feldspar, numerous rhombs; very fine sand scarce; some biotite, muscovite, and pink hematitic mica; glauconitic; black opaque minerals in part altered, in part magnetic, scarce; trails common throughout; faintly concentric, inch-sized, elliptical markings on top surface may be caused by weathering of a thin, irregularly bedded rock; beds 0.25 to 3 inches in lower 5 feet; 2 to 8 inches in upper 2 feet; shale films between beds; from 230 to 231 feet, very argillaceous, thin-bedded, recessive.	8	470	225 - 233
	Thin sectioned at 233 feet. Siltstone and limestone--siltstone mostly feldspar, quartz, muscovite, weathered opaque mica, and interstitial, microgranular calcite, some glauconite and altered black opaque minerals; limestone mostly trilobite debris and a few phosphatic brachiopod shells in cloudy, impure, microgranular calcite, some silt similar to above; clear calcite borders one side of shells as if matrix settled after shells were deposited; if this is true, limestone was deposited first followed by siltstone; the contact between the two is irregular.			
	Fossils collected from 232 feet, Wilbernia pero (Walcott),			

Description	Thickness in feet Interval	Cumulative	Feet above base
Ellipsocephaloides sp., and linguloid; at 233 feet, *Ellipsocephaloides silvestris* Resser, *Wilbernia pero* (Walcott), and linguloid.			
SHIFT downstream about 850 feet crossing prominent drain and fence; continue down in section along east bank of river; base of intraformational conglomerate in interval below was used for making shift.			
35. Siltstone, shale, and limestone--siltstone light olive-gray to yellowish-gray, similar to above, minute ripples common, a few mud-flow(?) markings, beds paper-thin to 3 inches; shale films between siltstone beds; a 6-inch limestone intraformational conglomerate at 222 feet, very fine-grained pebbles in a medium-grained matrix, another 4-inch one at 225 feet, glauconitic.	5	475	220 - 225
Thin sectioned at 225 feet. Limestone intraformational conglomerate--pebbles mostly aphanitic to microgranular with various proportions of finely comminuted trilobite and pelmatozoan debris, silt, glauconite, pellets, and calcite, a few aphanitic pebbles essentially free of minerals other than calcite; matrix composed of mostly trilobite debris, and some glauconite and dolomite in clear to cloudy secondary calcite added to pelmatozoan debris; some very coarsely crystalline calcite confined to one side of pebbles may have formed in voids caused by nonuniform settling of matrix beneath pebbles; portion of pebble in contact with coarse calcite commonly corroded; silt mostly feldspar, both detrital and authigenic, some quartz and mica; glauconite in tiny fragments and fairly well-rounded grains; dolomite, about 0.25 mm, mostly confined to matrix, in part replaced by calcite and admixed limonite; a few pebbles veined by clear calcite, veins terminate at borders.			

Description	Thickness in feet Interval	Cumulative	Feet above base
Fossils collected from 225 feet, Chariocephalus whitfieldi Hall.			
SHIFT downstream 250 feet; continue down in section along east river bank.			
36. Siltstone, limestone, and shale--mostly limestone in lower part to mostly siltstone in upper part. Limestone mostly fine- to medium-grained, greenish-gray, slightly glauconitic, very argillaceous, silty, mica common, some coarse-grained, fossiliferous, associated with stromatolites and as thin lenses; stromatolites at 207 feet, 4 to 16 inches in diameter, 1 to 3 feet apart; from 210 to 212 feet, almost a continuous stromatolitic biostrom, stromatolites 3 to 6 inches, septae indistinct; limestone intraformational conglomerate from 209.5 to 210 feet, from 212.5 to 213 feet; at 218 feet, a 4-inch bed. Shale occurs as films between limestone and siltstone beds. Siltstone light olive-gray to yellowish-gray; calcitic; much fine sand; sand and silt mostly feldspar, a few rhombs, much quartz; hydrobiotite, biotite, muscovite, and some pink hematitic mica; glauconitic, glauconite in large grains, and appears to be very pure; black opaque minerals scarce, a few magnetic; some beds smooth, others contain raindrop(?) impressions, mud flowage(?) marks, trails, and minute ripples.	16	491	204 - 220
Thin sectioned at 205 and 220 feet. At 205 feet, limestone--much silt, mica, glauconite, and trilobite debris, a few intraclasts and some calcareous and phosphatic brachiopod fragments in fine- to very fine-grained, clear, secondary calcite added to pelmatozoan debris; intraclasts contain silt, mica, glauconite, and fossil debris in an aphanitic matrix; silt mostly feldspar,			

Description	Thickness in feet Interval	Cumulative	Feet above base
in part clear authigenic rhombs, some weathered detrital, black opaque minerals; glauconite small, irregular grains or fragments; mica much bent and frayed, mostly hydrobiotite in part altered to muscovite; thin beds, a few of which are siltstone, and bedding irregularities distinct. At 220 feet, siltstone--mostly feldspar, some quartz, mica, and black opaque minerals in microgranular calcite; feldspar mostly weathered, rhombs scarce; mica bent, altered, in part hydrobiotite; black opaque minerals mostly nonmagnetic; glauconite in tiny irregular grains, scarce.			
Fossils collected from 205.5 feet, Idahoia wisconsensis (Owen); at 210 feet, Idahoia wisconsensis (Owen) and Ellipsocephaloides silvestris Resser.			
SHIFT downstream about 650 feet; continue down in section along east bank of river.			
Morgan Creek Limestone Member: 127 feet thick			
37. Limestone--coarse-grained; greenish-gray to pale yellowish-brown; patches of dolomite, dark yellowish-orange; silty; upper surface ripple-marked.	2	493	202 - 204
Thin sectioned at 204 feet. Limestone--abundant calcareous brachiopod, pelmatozoan, and trilobite debris, a few gastropods, many intraclasts, much dolomite, and some glauconite and silt in an aphanitic to microgranular groundmass; intraclasts aphanitic, in part probably fossil fillings, others of pebble size are mostly large fossil fragments with some adhering matrix, in part replaced by dolomite, in part glauconitic; dolomite, 0.15 to 0.3 mm, also replaces spherical pelmatozoan grains with replacement taking place before grains were abraded; one intraclast includes two opposed valves of a brachiopod which			

Description	Thickness in feet Interval	Cumulative	Feet above base
enclose dolomite and glauconite; also pelmatozoan debris and abraded dolomite coat the outside of one valve and aphanitic limestone and pelmatozoan debris invaded by ordered glauconite coat the other; dolomite in part altered to calcite and admixed limonite; silt mostly detrital feldspar and quartz, a few authigenic feldspar rhombs; irregular lobate grains of glauconite in both intraclasts and matrix, in part admixed with calcite, replaces pelmatozoan debris, borders intraclast where it is in part ordered; stylolites indistinct.			
Some trilobite spines as much as 3 inches long.			
Fossils collected from 202 feet, Drumaspis idahoensis Resser and Billingsella texana Bell; from 204 feet, Drumaspis idahoensis Resser, Sinuella minuta Knight, Pseudagnostus cf. P. communis (Hall and Whitfield), Billingsella texana Bell, and Idahoia wisconsensis (Owen).			
38. Shale and limestone--limestone fine-grained; greenish-gray; glauconitic; micaceous, mostly pink, hematitic mica, some hydrobiotite and muscovite; sandy, sand very fine; silty; a few black opaque minerals, in part magnetic; in part distinctly bedded, beds 0.25 to 1 inch, in part nodular from burrows; beds in part separated by shale films; recessive.	2	495	200 - 202
SHIFT downstream about 500 feet; continue down in section along east bank of river.			
39. Limestone--fine- and coarse-grained, glauconitic, silty, sandy, micaceous alternating with very fine-grained stromatolitic zones; silt and sand mostly feldspar rhombs, some quartz; abundant muscovite and hematitic mica.	8	503	192 - 200

Description	Thickness in feet Interval	Cumulative	Feet above base
From 192 to 196 feet, a 3-foot stromatolitic biostrom merging upward into coarse-grained, light olive-gray to greenish-gray, dolomitic, oolitic limestone, ooids replaced by light grayish-orange dolomite; from 196 to 197 feet, 6- to 24-inch stromatolites, yellowish-gray, widely dispersed in coarse-grained limestone; from 197 to 199 feet, mostly coarse-grained, a few dusky yellow dolomite patches, a few inches at top fine-grained, argillaceous, recessive; from 199 to 200 feet, a stromatolitic biostrom, in plan 3-foot stromatolitic areas composed of 4-inch stromatolites, septae coarse-grained, slightly glauconitic.			
Thin sectioned at 200 feet. Limestone--stromatolitic, mostly aphanitic, faintly to distinctly pelleted, some faint to distinct intraclasts, slightly trilobitic, irregularly cloudy and irregularly intermixed with patches of microgranular clear calcite; a few scattered 0.1-mm dolomite rhombs, mostly replaced by mosaic calcite and admixed limonite.			
Fossils collected from 195 feet, Drumaspis texana Resser; from 196 feet, Drumaspis idahoensis Resser, Pseudagnostus cf. P. communis (Hall and Whitfield), Saratogia fria Lochman and Hu, and Billingsella texana Bell; from 195.5 feet, Drumaspis idahoensis Resser, Saratogia fria Lochman and Hu, Wilbernia pero (Walcott), and Taenicephalina globula Lochman and Hu; from 200 feet, Saratogia fria Lochman and Hu, Saratogia modesta (Lochman and Hu), Drumaspis idahoensis Resser, Wilbernia pero (Walcott), Drumaspis sp., linguloid. Branching objects of white calcite 0.25 inch in diameter, 3 or more inches long noted by Barnes from 197 to 199 feet.			
40. Limestone and shale--limestone fine-grained; medium light-gray to	3	506	189 - 192

	Description	Thickness in feet Interval	Cumulative	Feet above base
	greenish-gray; argillaceous; silty; glauconitic; stromatolites at base of interval form an almost continuous layer, average 8 to 12 inches in diameter, 6 inches in height, a few as much as 10 inches, septae mostly fine-grained, greenish-gray; vuggy, vugs contain calcite crystals up to 0.05 inch in size; beds an inch and less separated by very thin shale films, recessive. Thin sectioned at 189 feet. Limestone--stromatolitic, aphanitic, slightly silty, pelleted, slightly trilobitic, contains an intraclast or burrow composed of silt, pellets, and trilobite debris in a microgranular to aphanitic matrix; silt mostly feldspar, in part authigenic rhombs; biotite much altered, in part frayed; small glauconite fragments scarce. Fossils collected from 189 feet, Drumaspis texana Resser, Saratogia americana (Lochman and Hu), Saratogia fria Lochman and Hu, Saratogia modesta (Lochman and Hu), and Wilbernia pero (Walcott).			
41.	Limestone--coarse-grained; light olive-gray to greenish-gray; slightly silty and micaceous; glauconitic; dolomite common as irregular patches and as replacement of irregular objects; stylolites numerous and distinct; wavy bedding, massive, three ledges. Fossils collected from 188 feet, Drumaspis texana Resser, Pseudagnostus cf. P. communis (Hall and Whitfield), Saratogia fria Lochman and Hu, Saratogia modesta (Lochman and Hu), Billingsella coloradoensis (Shumard), Wilbernia pero (Walcott), Angulotreta microscopia (Shumard), Sinuella minuta Knight, linguloid, and pelmatozoan columnal?.	4	510	185 - 189
42.	Shale and limestone--shale in lower part greenish-gray, silty, micaceous,	4	514	181 - 185

Description	Thickness in feet Interval	Cumulative	Feet above base
calcitic, distinctly bedded, fissile, arches over smooth, biscuit-shaped stromatolites; stromatolites up to 5 feet in diameter, spaced 10 feet or more apart, a faint inch-size pattern on the surface of some; shale grades upward into rough weathering greenish-gray, very silty, sandy, argillaceous, nodular limestone; sand fine and very fine, silt and sand mostly feldspar, abundant rhombs, quartz common, black opaque minerals common, in part magnetic; abundant hematitic mica and hydrobiotite.			
Thin sectioned at 184.5 feet. Limestone--much silt, very fine sand, glauconite, and mica, a few phosphatic brachiopod fragments, and some trilobite debris in very fine to fine-grained, clear, secondary calcite added to pelmatozoan debris; silt and sand mostly fresh detrital feldspar, many rhombs, some quartz; mica mostly frayed, altered, in part hydrobiotite, in part muscovite; glauconite mostly in irregular fragments, only a few rounded grains; black opaque minerals mostly altered, common. Mica, glauconite, and feldspar show the following relationships: (1) Some grains composed of both hydrobiotite and glauconite. (2) A few glauconite grains partly surrounded by a medium birefringent optically continuous, curved, green rim (ordered glauconite). (3) A green mineral between muscovite laminae is probably either glauconite or hydrobiotite. (4) A few grains of feldspar are replaced along the cleavage by a green mineral. (5) Rhombic glauconite grains may have replaced feldspar rhombs; such grains are scarce.			
SHIFT downstream 250 feet across fault; continue down in section along east bank of river.			

Description	Thickness in feet Interval	Cumulative	Feet above base
43. Limestone--fine- and coarse-grained, mostly various shades of greenish-gray, glauconitic, thick-bedded; coarse-grained, part wavy-bedded, 0.25 inch dolomitized objects, stylolites; fine-grained part mottled light olive-gray and greenish-gray, mica common on bedding planes, indistinctly nodular; basal few inches argillaceous, recessive, conforms to underlying stromatolites; residue sand, silt, mica, and glauconite similar to above.	12	526	169 - 181
From 169 to 170 feet, coarse-grained; from 170 to 171 feet, fine-grained, argillaceous; from 171 to 173 feet, coarse-grained followed by 4 inches that is fine-grained, argillaceous, 5 inches coarse-grained, 1 inch fine-grained, argillaceous, 8 inches coarse-grained, and 18 inches fine-grained, argillaceous; from 176 to 181 feet, coarse-grained, patches of dolomite near middle, essentially one massive bed with indistinct bedding, forms 4.5-foot rapids in James River.			
Thin sectioned at 174.5 feet. Limestone--abundant silt and very fine sand, mica, some glauconite, and much trilobite and some phosphatic brachiopod debris in very fine- to medium-grained, clear, secondary calcite added to pelmatozoan debris; silt mostly clear detrital feldspar, many authigenic rhombs, otherwise little indication of secondary growth, some quartz; mica, originally biotite, mostly frayed, bent, and altered, interleaved with colorless mica that is probably the end product of the alteration; glauconite irregular, fragmental; bedding is distinct on etched surfaces and is gradational in thin section, some depositional irregularities.			

	Description	Thickness in feet Interval	Cumulative	Feet above base
	In top surface of interval some white, calcite fossils are present similar to those found occasionally in stromatolites in the upper part of the Morgan Creek Limestone in the eastern part of the Llano region.			
	Fossils collected from 169 feet, Conaspis masonensis Ellinwood, Saratogia americana (Lochman and Hu), Taenicephalus shumardi (Hall), Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Taenicephalus sp., pelmatozoan columnals(?), and linguloid; from 172 feet, Idahoia lirae (Frederickson) and Wilbernia diademata (Hall); from 173 feet, Idahoia lirae (Frederickson), Idahoia lirae (Frederickson) var. A, Bell in Bell and Ellinwood, Wilbernia diademata (Hall), and linguloid (cf. Pseudodicellomus sp.); from 175.5 feet, Idahoia lirae (Frederickson); from 177 feet, Idahoia lirae (Frederickson), Pseudagnostus cf. P. communis (Hall and Whitfield), Saratogia americana (Lochman and Hu), Wilbernia diademata (Hall), Billingsella coloradoensis (Shumard), and Sinuella minuta Knight.			
44.	Limestone stromatolitic biostrome-stromatolites fine- to very fine-grained, light olive-gray, circular to elongate, in plan from 0.5 to 3 feet across, some three times as long as wide, centers of some weather low forming 2-inch depressions; septae medium- to coarse-grained, medium olive-gray, in part dolomitized toward base.	3	529	166 - 169
	Fossils collected from 168 feet, Conaspis masonensis Ellinwood.			
45.	Limestone--mostly coarse-grained, glauconitic, stylolitic, some fine-grained, greenish-gray to light olive-gray, argillaceous; silty, sandy, sand mostly fine and very fine, a few larger grains mostly quartz, much feldspar, both detrital and authigenic, the latter	11	540	155 - 166

Description	Thickness in feet Interval	Cumulative	Feet above base
in part as overgrowths; some muscovite, much hematitic mica; wavy bedding.			
From 155 to 156.5 feet, coarse-grained, oolitic in lower part, some dolomite patches, one bed; from 156.5 to 158 feet, fine-grained, very glauconitic, some crossbedding; from 158 to 159 feet, coarse-grained, oolitic, elliptical solution pits; from 159 to 160 feet, fine-grained; from 160 to 162.5 feet, coarse-grained, oolitic, patches of brownish-yellow dolomite common; from 162.5 to 164 feet, fine-grained, glauconitic, distinctly bedded, recessive, a few hard beds; from 164 to 166 feet, coarse-grained, dolomitized objects common, solution pitted, one bed.			
Thin sectioned at 156, 157.5, and 161 feet. At 156 feet, limestone--numerous round objects of dolomite, and a few intraclasts and corroded fossil fragments, mostly in a radial, clear calcite matrix, a very small amount of mica-bearing, pelleted, aphanitic matrix; intraclasts aphanitic with an overgrowth of radial calcite, clouded to pelleted, argillaceous; a few 0.03-mm dolomite rhombs replace radial ooids, centers of same type material as intraclasts; dolomite, 0.1 to 0.2 mm, replaces objects 0.5 to 1.5 mm in diameter, possibly both ooids and rounded pelmatozoan debris; time of replacement uncertain but possibly before objects reached their final resting place, as indicated by truncated rhombs at peripheries of a few; silt and very fine sand scarce, mostly feldspar; some hydrobiotite; glauconite scarce, tiny grains. At 157.5 feet, limestone--much glauconite, sand, and silt, some trilobite and pelmatozoan debris, and a few phosphatic brachiopod fragments, in a fine- to very fine-grained, clear calcite mosaic; sand fine and very fine, mostly fresh to weathered detrital			

Description	Thickness in feet Interval	Cumulative	Feet above base
feldspar and quartz, mica scarce; glauconite rounded to irregularly angular, 0.03 to 0.3 mm, a few grains veined by calcite; dolomite, 0.2 to 0.3 mm, microgranular aggregates may replace pelmatozoan debris, some in matrix, in part limonite-stained. At 161 feet, dolomite and limestone--mostly featureless microgranular dolomite, a 0.6-inch bed, between beds of limestone fine- to medium-grained, glauconitic, dolomitic, sandy, pelmatozoan-bearing; sand very fine to medium, one composite grain very coarse, mostly undulatory to straight extinction; rounded 1-mm pelmatozoan grains and other objects replaced by 0.1- to 0.2-mm dolomite showing some peripheral abrasion, some dolomite between these objects; glauconite in part in distinctly rounded 0.05- to 0.5-mm grains, in part with admixed calcite, in part disrupted by dolomite. A 0.5-inch burrow in dolomite filled by sandy, silty, glauconitic, slightly fossiliferous (trilobite and pelmatozoan debris, a few phosphatic brachiopod fragments), microgranular to aphanitic limestone; sand and silt mostly very fresh detrital feldspar, a few authigenic rhombs, some quartz, black opaque grains common, in part weathered; a few small clumps of very fine-grained dolomite altered to calcite and admixed limonite.			
Fossils collected from 156 feet, Taenicephalus shumardi (Hall) and Billingsella texana Bell.			
SHIFT northwestward about 400 feet, cross river, continue down in section down bluff to river.			
46. Limestone--mostly fine- to medium-grained, some coarse-grained. Fine- to medium-grained mostly pale olive; mottled, in part burrowed; sandy, sand mostly fine to very fine, some medium and coarse in upper sample; slightly silty; micaceous, mica	20	560	135 - 155

Description	Thickness in feet Interval	Thickness in feet Cumulative	Feet above base
mostly hematitic; argillaceous from 136.5 to 137.5, 143 to 144, 146 to 147.5, 149 to 149.5, and 153 to 154.5 feet, beds 2 to 18 inches. Coarse-grained, greenish-gray, mostly from 142.5 to 143, 145 to 146, 150.5 to 152, and 154.5 to 155 feet, top bed crossbedded, sandy, slightly pinkish, contains "mud ball"-like objects. This interval in combination with overlying one forms a sparsely vegetated bench which shows distinctly on aerial photographs.			
Thin sectioned at 155 feet. Limestone--trilobite and calcareous brachiopod debris, glauconite, some sand, and a few intraclasts and "mud balls" in fine- to coarse-grained, clear, secondary calcite added to pelmatozoan debris; small intraclasts aphanitic, contain silt, very fine sand, and angular glauconite fragments, mostly appear to be fossil fillings, one definitely has the shape of a gastropod whorl; "mud balls" composed of dense, structureless, argillaceous(?), limonitic calcite interswirled with hazy, aphanitic to very fine-grained, silty, glauconitic, argillaceous, fossiliferous limestone, the whole partly encased by a very thin film of aphanitic limestone showing that these objects are actually intraclast-like; sand very fine to medium, some silt, angular, mostly quartz, mostly straight extinction, some undulatory extinction, composite grains common; very fine sand and silt of intraclasts and "mud balls" about equally quartz and detrital feldspar; glauconite, 0.1 to 0.4 mm, mostly in round to elliptical grains, exceptionally pure except for some peripheral limonitic weathering, thin films of ordered glauconite common; dolomite scarce, 0.2 to 0.3 mm, replaces pelmatozoan debris and fossil fillings, in part replaced by calcite and admixed limonite, one fresh 0.5-mm rhomb; direction of bedding indicated by variation in concentration of glauconite.			

Description	Thickness in feet Interval	Cumulative	Feet above base
Fossils collected from 136 feet, Orygmaspis llanoensis (Walcott), Billingsella coloradoensis (Shumard), Taenicephalus shumardi (Hall), Wilbernia halli Resser, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), and pelmatozoan fragment; from 149 feet, Billingsella texana Bell; from 151 feet, Billingsella texana Bell.			
SHIFT downstream about 600 feet; continue down in section down bare slope to water's edge.			
47. Limestone--alternating coarse- and fine-grained, glauconitic; fine-grained mostly pale olive, argillaceous, mottled, nodular; coarse-grained greenish-gray, trilobite and Billingsella coquinite; sandy and silty, sand mostly very fine, sand and silt about equally quartz and feldspar, the latter in part authigenic both as rhombs and overgrowths; some clear mica in residue with refractive index less than 1.534.	10	570	125 - 135
From 125 to 127.5 feet, mostly fine-grained, a coarse-grained 3-inch bed in upper part; from 127.5 to 128 feet, coarse-grained, one bed; from 128 to 129 feet, fine-grained, beds 0.25 inch to 2 inches; from 129 to 130 feet, fine-grained, nodular; from 130 to 132.5, 4 inches coarse-grained, 9 inches fine-grained, burrowed, 2 inches coarse-grained, 2 inches fine-grained, 13 inches coarse-grained; from 132.5 to 135 feet, fine-grained, argillaceous, nodular, burrowed, recessive.			
Fossils collected from 125 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott),			

	Description	Thickness in feet Interval	Cumulative	Feet above base
	Taenicephalus gouldi (Frederickson), and Pelagiella sp.; from 126 feet, Angulotreta microscopica (Shumard), Billingsella coloradoensis (Shumard), Huenella abnormis (Walcott), Conaspis testudinatus Ellinwood, Orygmaspis llanoensis (Walcott), Taenicephalus gouldi (Frederickson); from 126.3 feet, Orygmaspis llanoensis (Walcott), Taenicephalus gouldi (Frederickson), Billingsella coloradoensis (Shumard), Huenella abnormis (Walcott), and Wilbernia? sp.; from 127 feet, Orygmaspis llanoensis (Walcott), Billingsella coloradoensis (Shumard), Huenella abnormis (Walcott), Taenicephalus cf. T. gouldi (Frederickson); from 131 feet, Orygmaspis llanoensis (Walcott), Taenicephalus shumardi (Hall), Wilbernia halli Resser, var. A. Ellinwood, Billingsella coloradoensis (Shumard), Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell); from 132 feet, Orygmaspis llanoensis (Walcott), Taenicephalus shumardi (Hall), Billingsella coloradoensis (Shumard), and Huenella abnormis (Walcott); from 133 feet, Billingsella texana Bell.			
48.	Limestone--coarse- to medium-grained, greenish-gray, glauconitic, some dolomite patches in lower part, slightly silty, bedding wavy, uneven.	4	574	121 - 125
	Fossils collected from 121 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Eoorthis indianola (Walcott), Eoorthis remnicha (Winchell), Irvingella major Ulrich and Resser, Parabolinoides contractus Frederickson, and Parabolinoides granulosus Ellinwood; from 122 feet, Angulotreta microscopica (Shumard), Billingsella coloradoensis (Shumard), Eoorthis remnicha (Winchell), Orygmaspis llanoensis (Walcott), var. A. Longacre, Parabolinoides contractus Frederickson, Parabolinoides granulosus			

Description	Thickness in feet Interval	Cumulative	Feet above base
Ellinwood, Pelagiella sp., and linguloid; from 124 feet, Angulotreta microscopica (Shumard), Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), and Orygmaspis llanoensis (Walcott), var. A Longacre.			
SHIFT downstream about 600 feet, cross fault, continue down in section along west bank of river to mouth of Riley Branch.			
49. Limestone--alternating coarse- and fine-grained; mostly reddish-gray below 94 feet, mostly greenish-gray above; glauconitic; fine-grained part argillaceous to silty; coarse-grained part stylolitic, bedding wavy; lower 10 feet slightly sandy; sand in lower 5 feet fine to medium, next 5 feet very fine to fine, some silt and very fine sand in rest of interval; from 100 to 105 feet, pelmatozoan columnals and cellular(?) fragments remain in residue.	32	606	89 - 121
From 89 to 91 feet, coarse-grained, crossbedded, 2 beds; from 91 to 92.5 feet, fine-grained, recessive, one coarse-grained, 4-inch bed; from 92.5 to 95 feet, coarse-grained, irregular 1.5 inch "mud balls", one bed; from 95 to 96 feet, coarse-grained, a few pelmatozoan fragments; from 96 to 97 feet, coarse- to fine-grained, recessive, nodular; from 97 to 97.5 feet, coarse-grained, "mud balls" common; from 97.5 to 99 feet, fine-grained, recessive; from 99 to 100 feet, coarse- to fine-grained, irregular-shaped "mud balls" abundant; from 100 to 104 feet, coarse-grained, a few "mud balls", patches of dolomite along bedding, crossbedded, beds 4 to 12 inches, short vertical gash veins of calcite perpendicular to bedding trend northwest; from 104 to 105 feet, fine-grained; from 105 to 106 feet, coarse-grained, two beds, northwest-trending, calcite, gash veins common; from 106 to			

Description	Thickness in feet Interval	Cumulative	Feet above base
106.3 feet, shale; from 106.3 to 107.2 feet, coarse-grained; from 107.2 to 107.7 feet, fine-grained; from 107.7 to 108 feet, shale, burrowed; from 108 to 109 feet, coarse-grained; from 109 to 110 feet, fine-grained, burrowed, recessive; from 110 to 111.5 feet, coarse-grained, two beds, top one 0.5 foot; from 111.5 to 113 feet, fine-grained, burrowed, recessive; from 113 to 120 feet, coarse-grained, pinkish-gray, patches of brownish-yellow dolomite common, wavy bedding, massive, poorly defined ledges; from 120 to 120.5 feet, fine-grained; from 120.5 to 121 feet, coarse-grained.			
Fossils collected from 120 feet, Comanchia amplooculata (Frederickson), Irvingella major Ulrich and Resser, and linguloid type A; from 120.5 feet, Eoorthis indianola (Walcott), Eoorthis remnicha (Winchell), Comanchia amplooculata (Frederickson), Irvingella major Ulrich and Resser, Sulcocephalus candidus (Resser), Angulotreta sp., and linguloids types A and B.			
SHIFT downstream northeastward 1.1 miles to east bank of James River using Eoorthis Bed to make shift; continue down in section along upper edge of bluff. From 89 to 121 feet redescribed, as this rock is weathered and that upstream is fresh.			
49. Limestone--(This interval is redescribed here) mostly coarse-grained, some fine- to medium-grained; mottled; reddish-gray at base, pinkish-gray upward, higher beds greenish-gray, top 0.5 foot light gray; ooids and pisolites abundant from 119 to 120 feet; glauconitic throughout, grains bright, smooth; mica abundant on some bedding planes; very slightly silty; slightly sandy in lower few feet, sand mostly very fine; dolomite patches at 119 and 120.5 feet, dark yellowish-orange, a foot or more	24	598	97 - 121

Description	Thickness in feet Interval	Cumulative	Feet above base
across, 1 inch thick; beds mostly 2 to 8 inches, recessive; argillaceous zones mostly poorly exposed, well exposed in bluff where they are difficult to reach. Fossils are trilobites and phosphatic brachiopods; pelmatozoan fragments are abundant in some beds. Eoorthis at 121 feet forms base of overlying interval.			
50. Limestone--(8 feet of this interval is redescribed here) coarse-grained; grayish-red; slightly glauconitic; very sandy at base to slightly sandy at top, sand fine to coarse, a few very coarse grains, granules rare in lower sample, grains mostly angular to subrounded, a few rounded and polished; oolitic to pisolitic; fossil fragments and limonite brown objects of varied lobate shape abundant; beds mostly 2 to 8 inches, in bluff massive; small patches and veins of white calcite common.	20	618	77 - 97
Welge Sandstone Member: 20 feet thick			
51. Sandstone--medium- to very coarse-grained, a few granules and small pebbles up to 0.15 inch; brown; nonglauconitic; upper 2 feet calcitic; grains fairly well rounded, slightly reconstituted displaying many tiny crystal faces; thin shale films between some beds preserve a few Cruziana-like markings; argillaceous at 75 feet; massive, lower bed measures 4 feet followed by 1- to 3-foot beds.	18	636	59 - 77
52. Sandstone--fine-grained, yellowish-brown, nonglauconitic, argillaceous, slightly cemented; recessive, appears to be reworked by organisms.	2	638	57 - 59

SHIFT northward along bluff 50 feet; continue down in section down bluff.

Description	Thickness in feet Interval	Cumulative	Feet above base
Riley Formation: 57 feet described Lion Mountain Sandstone member: 57 feet thick			
53. Greensand--grayish-green; about half glauconite; rest mostly quartz sand, medium to very-coarse, subrounded to well rounded, reconstituted especially in upper part; glauconite in part finely comminuted, in part in distinct grains, smooth, elliptical to irregular and lobate, rarely septarianlike, slightly hematitic indicated by red streak; from 49 to 50.5 and 52 to 54 feet, indurated; rest friable, and occasional calcitic crossbed in upper 3 feet; indurated beds calcitic, somewhat fossiliferous. Fossils are trilobites and phosphatic brachiopods throughout.	8	646	49 - 57
SHIFT downstream along bluff about 75 feet; continue down in section down bluff.			
54. Greensand and limestone--mostly greensand composed about equally of glauconite and quartz sand; sand mostly fine to very coarse, lower sample mostly fine and very fine, angular from reconstitution; glauconite mostly finely comminuted, some grains slightly hematitic indicated by red streak; hematite masses in lower part several feet long, about 4 inches wide horizontally, about 6 inches thick vertically, probably formed along joints, similar masses exposed in plan in Pole Pen Hollow; crossbedded. Limestone coarse-grained, green to white depending on glauconite content, glauconite mostly in well-defined grains, lenses of trilobite coquinite common throughout, limestone most abundant below 39 feet, a few fairly continuous beds. Shale scarce, a few thin beds,	24	670	25 - 49

Description	Thickness in feet Interval	Cumulative	Feet above base
most pronounced one from 39 to 39.5 feet.			
Phosphatic brachiopods common in lower part, less common in upper part, trilobites throughout.			
55. Shale, limestone, and greensand--in about equal amounts; bottom 2 feet distinctly bedded, contains thin layers of friable greensand; upper 3 feet grayish-green mottled by grayish-purple; massive, wavy bedded, much reworked by organisms; sandy, sand fine to coarse, angular from reconstitution, a few grains well rounded.	5	675	20 - 25
Fossils are a few phosphatic brachiopod fragments.			
56. Greensand--about equally glauconite and quartz, glauconite both finely comminuted and in distinct grains; hematite concretions along one bedding plane, up to 6 inches thick, 5 feet long, average about 2 feet; sandy throughout, centers of concretions dense, hard hematite followed by a 0.25-inch porous zone, then a zone about 0.75-inch thick composed of a hematite network about glauconite grains; the hematite decreasing in amount outward until friable greensand is reached.	1	676	19 - 20

Thin sectioned at 19.5 feet. Hematite--glauconite, quartz, calcite, pores, feldspar scarce, and fragments of trilobites and phosphatic brachiopods in a dark dull red, opaque, hematite matrix; quartz sand angular to rounded, fine-grained, mostly weak to strong undulatory extinction, appears to be invaded by iron oxide (Pl. 10, fig. 2); secondary quartz mosaics at one end of slide fill voids left by weathering of glauconite (Pl. 10, fig. 3); glauconite abundant at one end of slide is replaced

Description	Thickness in feet, Interval	Cumulative	Feet above base
near the middle by limonite or represented by voids which are filled by secondary quartz (Pl. 10, fig. 3) at the opposite end of the slide; calcite mostly mosaic, fossil replacement, some radial, some in veins is strongly invaded by hematite (Pl. 10, fig. 2); phosphatic brachiopods slightly invaded by hematite; direction of bedding indicated by alignment of fossil debris. Phosphatic brachiopod fragments common in concretions.			
SHIFT downstream about 1,000 feet across Pole Pen Hollow; continue down in section down small cliff.			
57. Greensand and limestone--greensand mostly finely comminuted glauconite, slightly hematitic, numerous small, smooth, elliptical to lobate glauconite grains and quartz sand; quartz very fine to coarse, reconstituted; hematite concretions common in lower part. Limestone in part white, trilobite coquinite, crossbeds up to several feet in length scattered throughout the greensand; in part in more or less continuous beds, various greens, more glauconitic portions dusky green to dusky yellowish-green, mostly very glauconitic, grains distinct.	7	683	12 - 19
58. Shale and limestone--shale grayish olive-green; where reworked by organisms bedding is indistinct, elsewhere very distinctly and thinly bedded; burrows filled by fine to medium sand, many trails. Limestone mostly a crossbedded, trilobite coquinite; very glauconitic; ripple-marked at 10 feet, crests 2 feet apart; resting on ripple-marked surface is glauconitic sand containing irregular fragments of limestone and hematite. Fossils are Aphelaspis and Raschella at 8 feet.	4	687	8 - 12

	Description	Thickness in feet Interval	Cumulative	Feet above base
59.	Shale--grayish olive-green, a few trails and ripple marks, bedding indistinct, much reworked by organisms, burrows filled by fine to medium sand.	2	689	6 - 8
60.	Sandstone--fine- to coarse-grained, brownish-yellow, very calcitic, glauconitic, grains angular to subrounded, in part reconstituted, essentially 2 beds, some reworked shale between beds, upper bed ripple-marked, 18 inches between crests. Crepicephalus fauna trilobites at 5 feet.	2	691	4 - 6
61.	Shale and sandstone--shale grayish olive-green, calcareous, very sandy, sand mostly reconstituted, trails common, much reworked by organisms, burrows more sandy than matrix; sandstone medium-grained, brownish-gray to brownish-yellow, very calcitic, ripple-marked, about 10 inches between crests, some limestone. Fossils from 3 to 4 feet are Crepicephalus fauna trilobites.	2	693	2 - 4
62.	Sandstone--fine-grained, yellowish-brown with a greenish cast from glauconite, very calcitic, argillaceous, glauconitic, sand mostly reconstituted, bedding mostly indistinct; from 0.5 to 1 foot, a few white, trilobite coquinite crossbeds. Fossils are Crepicephalus fauna trilobites.	2	695	0 - 2

Table 25. Heavy mineral frequency counts, upstream James River section, Mason County, Texas (counts made by T. R. Walker).

Member	Sample Interval (feet)	Zircon					Tourmaline			
		Total	Clear	Zoned	Dusty	Malacon	Total	Brown	Green	Black
San Saba	630-635	13.3	13.3	0.0	0.0	0.0	1.7	0.7	0.7	0.3
	590-595	32.7	30.0	0.0	2.7	0.0	1.3	1.0	0.3	0.0
	565-570	24.0	21.0	0.3	2.7	0.0	4.7	1.3	3.3	0.0
	505-510	34.3	28.7	2.7	3.0	0.0	2.0	1.3	0.7	0.0
	445-450	44.7	30.0	3.0	11.7	0.0	6.3	2.3	4.0	0.0
	415-420	14.0	8.3	1.0	4.0	0.7	2.0	1.7	0.3	0.0
Point Peak	290-300	8.3	6.3	0.7	1.3	0.0	2.7	0.0	2.7	0.0
	250-260	3.0	2.0	0.3	0.3	0.3	2.3	0.3	2.0	0.0
	220-230	7.3	4.0	2.0	1.3	0.0	1.3	1.0	0.3	0.0
Welge Sandstone	65-70	7.0	5.3	0.0	1.7	0.0	0.3	0.3	0.0	0.0
Lion Mountain Sandstone	40-45	4.7	4.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0
	5-10	5.0	3.7	0.0	1.3	0.0	0.0	0.0	0.0	0.0

Table 25 (continued)

Member	Sample Interval (feet)	Garnet			Rutile			Other Minerals					
		Total	Colorless	Pink	Total	Amber	Foxy red	Anatase	Altered ilmenite	Leucoxene	Black opaque	Barite	Pyrite
San Saba	630-635	6.3	6.3	0.0	0.3	0.0	0.3	0.0	6.7	71.0	0.7	0.0	0.0
	590-595	0.0	0.0	0.0	0.3	0.3	0.0	23.0	11.7	31.0	0.0	0.0	0.0
	565-570	2.0	2.0	0.0	1.0	1.0	0.0	21.3	6.3	39.7	0.7	0.0	0.3
	505-510	0.0	0.0	0.0	2.3	2.3	0.0	28.0	6.3	26.7	0.3	0.0	0.0
	445-450	3.0	2.3	0.7	6.7	6.7	0.0	11.3	2.3	25.0	0.7	0.0	0.0
	415-420	1.3	1.0	0.3	1.7	1.7	0.0	12.0	32.0	28.3	5.3	3.3	0.0
Point Peak	290-300	1.3	1.3	0.0	2.0	1.7	0.3	7.7	19.3	45.0	14.0	0.0	0.0
	250-260	0.0	0.0	0.0	1.0	1.0	0.0	24.7	7.7	32.7	28.7	0.0	0.0
	220-230	0.7	0.7	0.0	0.0	0.0	0.0	14.3	12.0	44.0	20.7	0.0	0.0
Welge Sandstone	65-70	0.3	0.3	0.0	0.3	0.3	0.0	3.0	73.3	4.7	3.7	0.0	7.3
Lion Mountain Sandstone	40-45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.0	0.3	79.0	0.0	0.0
	5-10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.3	85.7	0.0	1.7

Table 26. Insoluble residue content, upstream James River section, Mason County, Texas.

Feet above base	Percent residue	Feet above base	Percent residue	Feet above base	Percent residue
690-695	8.8	540-545	5.8	390-395	19.1
685-690	10.2	535-540	1.6	385-390	28.9
680-685	9.8	530-535	3.0	380-385	32.4
675-680	9.3	525-530	17.4	375-380	22.6
670-675	9.6	520-525	17.1	370-375	18.5
665-670	8.5	515-520	5.1	365-370	16.4
660-665	10.0	510-515	45.2	364-365	12.6
655-660	14.7	505-510	46.6	355-360	13.6
650-655	10.1	500-505	40.4	350-355	17.0
645-650	5.7	495-500	33.8	345-350	13.7
640-645	26.1	490-495	37.1	340-345	11.0
635-640	33.9	485-490	35.3	335-340	7.6
630-635	66.5	480-485	14.6	330-335	13.7
625-630	58.7	475-480	31.6	325-330	8.3
620-625	12.6	470-475	46.9	320-325	7.1
615-620	9.8	465-470	53.6	315-320	39.4
610-615	6.3	460-465	57.2	310-315	54.1
605-610	12.3	455-460	46.8	305-310	40.4
600-605	8.2	450-455	44.6	300-305	41.3
595-600	16.3	445-450	69.4	295-300	46.1
590-595	31.4	440-445	43.7	290-295	52.5
585-590	31.1	435-440	31.0	285-290	49.5
580-585	23.4	430-435	44.8	280-285	28.8
575-580	17.6	425-430	23.1	275-280	42.5
570-575	23.8	420-425	38.2	270-275	52.2
565-570	86.3	415-420	35.1	265-270	63.0
560-565	77.1	410-415	17.4	260-265	51.7
555-560	53.1	405-410	17.6	255-260	76.2
550-555	46.1	400-405	14.8	250-255	60.6
545-550	25.6	395-400	2.6	245-250	51.3

Table 26
(continued)

Feet above base	Percent residue	Feet above base	Percent residue	Feet above base	Percent residue
240-245	40.0	150-155	19.8	90-95	13.2
235-240	28.7	145-150	38.4	85-90	19.2
230-235	67.9	140-145	36.5	80-85	35.3
225-230	56.8	135-140	15.8	75-80	69.0
220-225	58.6	130-135	20.9	70-75	99.9
215-220	61.1	125-130	17.6	65-70	99.9
210-215	17.6	120-125	8.1	57-65	94.2
205-210	5.3	115-120*	7.6	50-56½	75.9
200-205	23.4	115-121	7.5	45-50	86.4
195-200	23.1	110-115*	18.1	40-45	51.1
190-195	10.8	110-115	4.9	35-40	77.7
185-190	7.8	105-110*	28.1	30-35	73.5
180-185	21.9	105-110	9.3	25-30	86.7
175-180	24.0	100-105*	18.5	20-25	70.3
170-175	34.2	100-105	16.2	15-20	54.7
165-170	10.8	95-100*	28.9	10-15	52.2
160-165	23.1	95-100	12.9	5-10	75.1
155-160	22.5	90-95*	18.4	0-5	63.2

*Same interval resampled after offset.

Downstream James River Stratigraphic Section

The top of the section is 1.7 miles south-southwest of the mouth of James River, nearly one-half mile south-southeast of the Walter Zesch ranch house and about 200 feet south of the main road. The bottom of the section is on the west bank of James River one-half mile upstream from its mouth (Part 1, Pl. 7, fig. 1).

The downstream James River section was measured and fossil collections made by Palmer during the 1947-1948 field season. The section was described by Barnes and an area about it was mapped March 8, 1950.

The Lion Mountain Sandstone Member in this section is 55 feet thick; 225 feet of the Cap Mountain Limestone is also described.

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 280 feet described Riley Formation: 280 feet described Lion Mountain Sandstone Member: 55 feet thick			
1. Sandstone, shale, and limestone--glauconitic limestone and hematitic sandstone, in part float, fossiliferous; poorly exposed. Fossils collected from 250, 260, and 265 feet, *Apehlaspis walcotti* Resser and *Angulotreta triangularis* Palmer; and in addition, from 265 feet, *Aphelaspis conveximarginata* (Palmer); from 275 feet, *Dytremacephalus granulosus* Palmer. Hematitized trilobites collected 50 feet west of bottom of interval are at approximately 244 feet in section.	30	30	250 - 280
SHIFT north-northeast 2,500 feet along massive bed at 250 feet in section.			
2. Limestone, sandstone, and shale--limestone in lower part fine- to medium-grained, coarser grained upward; moderate yellowish-brown	25	55	225 - 250

Description	Thickness in feet: Interval	Cumulative	Feet above base
to pale yellowish-brown, some greenish-gray to light olive-gray, in part rusty weathering; glauconitic; in part silty; sandy; oolitic, ooids in part dolomitized; dolomite rhombs and replacement of fossil debris common; from 243 to 249 feet, mostly yellowish-gray, coarse-grained, trilobite coquinite cross-beds; beds mostly 6 inches or less as individual beds and groups of beds alternating with poorly exposed recessive intervals, well-exposed along bluff 100 feet south of section. Residue mostly fine and very fine sand, mostly quartz in part reconstituted, detrital feldspar scarce; glauconite abundant; some silt. Recessive intervals are olive-gray to brownish-gray shale and friable calcareous sandstone.			
Two thin sections from 225 to 250 feet. From 240 to 245 feet, limestone--abundant very fine sand and silt, some fine and medium sand, and a few trilobite, phosphatic brachiopod, and pelmatozoan fragments in a clear calcite mosaic; sand and silt mostly quartz and weathered feldspar, some clear feldspar, and a flood of black opaque minerals in part altered; glauconite fairly pure, in part fragmental, a few grains slightly weathered; distinctly bedded, bedding brought out chiefly by mineral content rather than grain size. From 245 to 250 feet, limestone--abundant trilobite debris, and some pelmatozoan and phosphatic brachiopod debris, glauconite, and sand in a radial, clear calcite matrix; glauconite			

Description	Thickness in feet: Interval	Cumulative	Feet above base
fairly pure, minor calcite and some limonitic alteration, a few grains fragmental; sand fine to medium, mostly angular, a few grains rounded, mostly quartz; dolomite very fine grained, limonitic from weathering, fills fossil cavities, replaces fossils and matrix, scarce. Fossils collected from 247 feet, Aphelaspis walcotti Resser, Angulotreta triangularis Palmer, and Dictyonina perforata Palmer; from 248 feet, Aphelaspis walcotti Resser, Angulotreta triangularis digitalis Palmer, and Aphelaspis conveximarginata (Palmer).			
Cap Mountain Limestone Member: 225 feet described			
3. Limestone and shale--mostly limestone fine- to medium-grained; moderate yellowish-brown to pale yellowish-brown, some greenish-gray to light olive-gray, mostly rusty weathering; glauconitic; in part silty and oolitic; sandy, sand mostly very fine and fine, some medium in bottom sample, mostly quartz, some detrital feldspar; dolomite rhombs, dolomitized ooids and other objects common. Shale olive-green to brownish-gray, recessive, better viewed along bluff to south of section. Three thin sections from 205 to 225 feet. From 205 to 210 feet, limestone or sandstone--about equally fine and very fine sand and fine-grained mosaic calcite with a few indistinct trilobite and phosphatic brachiopod fragments; glauconite limonite rimmed, rounded, a few fragments, abundant; sand mostly quartz, some detrital	20	75	205 - 225

Description	Thickness in feet: Interval	Cumulative	Feet above base
feldspar and black opaque minerals. From 215 to 220 feet, limestone--abundant trilobite and pelmatozoan debris, numerous ooids, and some glauconite, dolomite, silt, and very fine sand in part in an aphanitic and in part in a microgranular to very fine grained clear calcite matrix; ooids about 0.4 to 2 mm, distinct radial structure with rays and irregular patches of aphanitic calcite, faint concentric structure, a few with fossil fragments for nucleii, some replaced by dolomite; pelmatozoan debris secondarily enlarged, in part rounded resembling ooids; one intraclast in part aphanitic, pelleted, in part silty, sandy, fossiliferous; glauconite rounded to lobate mostly slightly calcitic; dolomite 0.05 to 0.3 mm, replaces matrix, intraclasts, ooids and some fossil debris, very limonitic, mostly replaced by calcite; sand and silt mostly quartz, some fresh feldspar, and black opaque minerals in part altered; some recent calcite along an open stylolite. From 220 to 225 feet, limestone--abundant sand, silt, and glauconite and a few phosphatic brachiopod fragments in a clear calcite mosaic; sand fine to very fine, angular, mostly quartz, abundant feldspar, both detrital and authigenic, a few black opaque minerals mostly altered; glauconite rounded to fragmented, fairly pure, in part limonite rimmed.			
Fossils collected from 218 feet, Coosia cf. C. albertensis Resser, Kingstonia (Ucebia) pontotocensis (Lochman), Llanoaspis peculiaris (Resser),			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Coosina cf. C. ariston (Walcott), Tricrepicephalus thoosa (Walcott), Diraphora sp., Opisthotreta depressa Palmer, and spicule type B; from 221 feet, Opisthotreta depressa Palmer; from 223 feet, Coosia cf. C. albertensis Resser, Kingstonia (Ucebia) pontotocensis (Lochman), Coosina cf. C. ariston (Walcott), Pseudagnostus(?) nordicus (Lochman), Tricrepicephalus cf. T. thoose (Walcott), and spicule type B.			
4.	Limestone--fine- to medium-grained, some coarse-grained; fine-grained in lower part olive-gray, in upper part mottled light-gray and light olive-gray, mostly silty, recessive; medium- and coarse-grained glauconitic, trilobitic, in part oolitic, ooids and other objects replaced by dolomite, beds mostly 6 inches or less. Residue glauconite, silt, and sand very fine to medium.	15	90	190 - 205
	Three sections from 190 to 205 feet. From 190 to 195 feet, limestone--trilobite debris, secondarily enlarged pelmatozoan debris, glauconite, and some dolomite and silt in a clear calcite matrix, in part radial, in part medium- to coarse-grained mosaic; glauconite mostly elliptical, in part fragmental, "moth-eaten" from calcite network; dolomite rhombs mostly about 0.1 mm, a few up to 0.5 mm, replaces matrix, intraclasts(?), occurs in cavities of fossils, some interstitial limonite; a burrow of aphanitic limestone contains abundant silt, very fine sand and phosphatic brachiopod fragments, silt and sand mostly quartz, detrital feldspar, and			

Description	Thickness in feet: Interval	Cumulative	Feet above base
black opaque minerals slightly altered. From 195 to 200 feet, limestone--trilobite and pelmatozoan debris, the latter rounded then secondarily enlarged, ooids, dolomite, silt, sand, and glauconite in part in a medium-grained, clear calcite matrix, much radial calcite around trilobites; a few distinct ooids, most objects of same size and shape are either rounded pelmatozoan debris or replaced by dolomite; dolomite mostly 0.1 to 0.5 mm, replaces ooids and pelmatozoan debris, fills cavities in fossils; glauconite spherical to elliptical and fragmental, some network calcite; silt, very fine sand and some fine sand mostly quartz, detrital feldspar, and altered opaque minerals. From 200 to 205 feet, limestone--pelmatozoan debris, a few phosphatic brachiopod fragments, glauconite, fine to very fine sand, and silt in part in a fine- to medium-grained, clear calcite mosaic; matrix in part microgranular, mostly burrow fillings, in part possibly intraclasts, very silty and sandy, sand and silt mostly quartz, some detrital feldspar, rhombs very scarce, and black opaque minerals; glauconite rounded to fragmental, contains less calcite than normal; dolomite 0.05 to 0.1 mm, scarce.			
Fossils collected from 201 feet, *Coosia* cf. *C. albertensis* Resser, *Crepicephalus autralis* Palmer, *Kingstonia* (*Ucebia*) *pontotocensis* (Lochman), *Llanoaspis undulata* Lochman, *Lonchocephalus* (?) sp., *Coosina* cf. *C. ariston* (Walcott), *Pemphigaspis inexpectans* Lochman, *Tricrepicephalus thoosa* (Walcott), and *Opisthotreta depressa* Palmer.			
SHIFT downstream along bluff about 300 feet; continue down in section.			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
5.	Limestone--fine-, medium-, and coarse-grained; fine-grained, light olive-gray, mottled, silty, in part glauconitic, burrowed, mostly recessive; medium- and coarse-grained, yellowish-gray to light brownish-gray, mostly glauconitic, in part oolitic, beds 3 to 6 inches. Residue a little glauconite; some sand, mostly very fine, upper sample very fine to medium, quartz and detrital feldspar both with authigenic overgrowths; mostly silt, in upper part mostly quartz, in lower part mostly detrital feldspar, some authigenic overgrowth. Three thin sections from 160 to 190 feet. From 170 to 175 feet, limestone--trilobite debris, Chancelloria-like fossils, and a few pelmatozoan fragments, in part in a microgranular to aphanitic matrix, in part in a very fine to fine grained, clear calcite mosaic; silt and glauconite fairly scarce. From 180 to 185 feet, limestone--trilobite debris, Chancelloria-like fossils, glauconite, dolomite, and a few ooids and pelmatozoan fragments in an aphanitic to very fine grained matrix; glauconite, rounded to lobate and fragmental, "moth-eaten" from network calcite; dolomite mostly microgranular, very limonitic, replaces matrix, ooids, fossils and intraclasts(?), mostly replaced by calcite; ooids scarce, mostly sharp with radial and concentric structure and included aphanitic calcite, one radial and hazy, a few replaced by dolomite; silt fairly scarce, mostly quartz and detrital feldspar, a few rhombs and black opaque minerals; much rock dissolved and caliche deposited along a stylolite of large amplitude. From 185 to 190 feet,	30	120	160 - 190

Description	Thickness in feet: Interval	Cumulative	Feet above base
limestone--abundant pelmatozoan debris, fine to very fine sand, and some silt, glauconite, and phosphatic brachiopod fragments in a microgranular calcite matrix; sand and silt angular, quartz, detrital feldspar, a few rhombs, and a flood of black opaque minerals (Pl. 10, fig. 6) in part altered; glauconite fragmental, contains very little calcite; a few irregular areas of microgranular dolomite, very limonitic, replaces matrix, replaced by calcite.			
Fossils collected from 163 feet, ?Coosella granulosa Rasetti, Coosina cf. C. ariston (Walcott), Llanoaspis modesta Lochman, Tricrepicephalus thoosa (Walcott), Opisthotreta depressa Palmer, spicule type B; phosphatic brachiopod fragments in a few beds.			
SHIFT downstream about 250 feet across second drain; continue down in section.			
6. Limestone--mostly fine, some medium- and coarse-grained; fine-grained, light olive-gray to light-gray, some mottles of moderate yellowish-brown, silty and sandy, sand mostly very fine, silt and sand mostly detrital feldspar, very little authigenic overgrowth, some quartz and mica; glauconitic; ooids abundant in some beds; beds 4 to 12 inches.	15	135	145 - 160
Three thin sections from 145 to 160 feet. From 145 to 150 feet, limestone--Chancelloria-like fossils, trilobite debris, secondarily enlarged pelmatozoan debris, and glauconite in clear calcite matrix which may be mostly calcite added to pelmatozoan debris; silt mostly			

Description	Thickness in feet Interval	Cumulative	Feet above base
feldspar, scarce; glauconite mostly lobate with network of calcite, some fragments; Chancelloria(?) (Pl. 10, figs. 4, 5) cellular with thin walls of mosaic calcite (evidently replacement), cells filled by aphanitic calcite and an occasional grain of glauconite and silt; limonite staining common in Chancelloria(?), around glauconite, in dolomite, and along feebly developed stylolites; dolomite replaces matrix and fossils, in turn altered to calcite. From 150 to 155 feet, limestone--mostly clear calcite of radial type indicating position of trilobite fragments which are no longer present, some indistinct much enlarged pelmatozoan fragments; some coarse mosaic calcite; a few phosphatic brachiopod fragments, silt, mostly quartz and detrital feldspar, and glauconite, fragmental, in a bed at edge of slide; irregular areas of very limonitic-weathered dolomite replacing matrix and fossils may possibly be along burrows. From 155 to 160 feet, limestone--numerous ooids, some trilobite and pelmatozoan debris, and silt, and a few intraclasts and Chancelloria-like fossils, mostly in a clear radial calcite matrix, some aphanitic matrix; ooids mostly 0.1 to 0.5 mm, larger ones have fossil fragments and intraclasts at center, mostly radial, some concentric structure, some rays of aphanitic calcite, mostly sharply bounded, a few hazy, a few partly replaced by dolomite; dolomite 0.02 to 0.2 mm, limonitic, replaces ooids, matrix and fossils, replaced by calcite; intraclasts identical to rock as whole, ooids truncated; silt			

Description	Thickness in feet: Interval	Cumulative	Feet above base
mostly quartz, authigenic feldspar, and black opaque minerals in part altered; glauconite fairly scarce, rounded to lobate and fragmental, some admixed calcite and irregularity in structure. Trilobites common.			
SHIFT downstream about one-quarter mile crossing river; continue down in section.			
7. Limestone--fine- to coarse-grained, light olive-gray, mottled, glauconitic, slightly silty, mostly detrital feldspar, moderate yellowish-brown dolomite replaces ooids and other objects, massive, beds 6 to 12 inches. One thin section from 140 to 145 feet. Limestone--intraclasts, trilobite debris, secondarily enlarged pelmatozoan fragments, and fossils in clear calcite matrix, mostly *Chancelloria*-like radial, some microgranular and very fine grained; intraclasts aphanitic, may be mostly cavity fillings in fossils; silt both quartz and detrital feldspar and glauconite lobate to fragmental, fairly scarce; dolomite, mostly 0.03 to 0.15 mm, in irregular streaks and patches, limonitic, replaces matrix and intraclasts, in part replaced by calcite, some scarcely altered. Fossils collected from 144 feet, *Llanoaspis modesta* (Lochman), *Diraphora* sp., *Opisthotreta depressa* Palmer, and spicule type B.	5	140	140 - 145
8. Limestone--mostly medium- to coarse-grained; light-gray to light olive-gray, where glauconitic greenish-gray; glauconite sparse to abundant;	25	165	115 - 140

Description	Thickness in feet: Interval	Cumulative	Feet above base
a few beds very oolitic; coarser grained beds fossiliferous; beds mostly 4 to 8 inches; a few fine-grained, mottled, silty intervals. Residue mostly silt and very fine sand, mostly detrital feldspar with some authigenic overgrowth, some quartz; glauconite common; some mica.			
Four thin sections from 115 to 140 feet. From 115 to 120 feet, limestone--trilobite debris with radial calcite and some silt and glauconite included in secondary calcite from enlargement of pelmatozoan debris; silty beds containing detrital feldspar and some quartz and altered opaque minerals alternate with nonsilty beds. From 120 to 125 feet, limestone--glauconite, dolomite, trilobite and pelmatozoan debris, and indistinct spicules type B in clear calcite matrix mostly from secondary enlargement of pelmatozoan debris; silt very scarce; glauconite mostly lobate, network calcite common, a few grains rather pure; dolomite mostly 0.1 to 0.2 mm, appears to mostly replace fossil debris, limonitic, mostly replaced by calcite. From 125 to 130 feet, limestone--much trilobite and pelmatozoan debris, the latter secondarily enlarged and filling all pore space; many trilobite fragments entirely replaced, others replaced except for very thin films; glauconite, pellets, and silt very scarce. From 130 to 135 feet, limestone--glauconite, dolomite, trilobite fragments in part replaced by radial calcite, and spicule type B replaced by calcite mosaics mostly in a matrix of secondary calcite added to pelmatozoan			

Description	Thickness in feet: Interval	Cumulative	Feet above base
debris; glauconite elliptical to slightly lobate, some network calcite; dolomite 0.1 to 0.5 mm, very limonitic, replaces ooids and matrix, mostly replaced by calcite; silt mostly feldspar and quartz, a few black opaque minerals, scarce except in fine-grained, burrow(?) fillings; a few very narrow calcite veins. Fossils collected from 120 feet, Arcuolimbus convexus Palmer, Coosella beltensis Lochman, Coosella granulosa Rasetti, Kormagnostus simplex Resser, Tricrepicephalus texanus (Shumard), Tricrepicephalus thoosa (Walcott), trilobite gen. and sp. undet. 3, Opisthotreta depressa Palmer, and Kinsabia variegata Lochman; from 132 feet, Arcuolimbus convexu, Palmer, Coosella beltensis Lochman, Coosella granulosa Rasetti, Kormagnostus simplex Resser, Tricrepicephalus thoosa (Walcott), Opisthotreta depressa Palmer, and Kinsabia variegata Lochman.			
9. Limestone--mostly fine-grained, a few beds medium- to coarse-grained; mostly between light olive-gray and light-gray mottled yellowish-gray, a few beds weather dark yellowish-orange, in lower part a few thin beds moderate-brown; mostly silty, silt similar to above; moderate-brown beds sandy, sand very fine to fine, a few grains medium, detrital feldspar and quartz; wavy bedding, massive. Two thin sections from 85 to 115 feet. From 85 to 90 feet, limestone--abundant silt and some indistinct fossil debris including phosphatic brachiopod fragments	30	195	85 - 115

Description	Thickness in feet: Interval	Cumulative	Feet above base
in a very fine grained to microgranular, cloudy calcite matrix; a few very indistinct intraclasts of similar material; silt mostly quartz, much feldspar both detrital and authigenic, altered biotite, and black opaque minerals in part altered, muscovite scarce; glauconite scarce, fragmental. From 110 to 115 feet, limestone--glauconite, silt, a few trilobite and phosphatic brachiopod fragments, and a few dolomitized round pelmatozoan grains mostly in a clear calcite mosaic of secondarily enlarged pelmatozoan debris; silt mostly quartz and detrital feldspar, a few rhombs, a few black opaque minerals mostly altered; glauconite lobate to fragmental, contains network calcite, limonite stained where weathered; dolomite 0.05 to 0.3 mm, mostly limonitic, replaces fossils, replaced by calcite; distinctly bedded.			
A few beds slightly fossiliferous.			
SHIFT downstream along bluff about 850 feet; continue down in section.			
10. Limestone--fine-grained, yellowish-gray to light olive-gray and pale yellowish-brown, mottled, much silt and very fine sand mostly detrital feldspar, some quartz, slightly glauconitic, micaceous, massive.	20	215	65 - 85
One thin section from 70 to 75 feet. Limestone--phosphatic brachiopod and trilobite debris and silt in a matrix of secondarily enlarged pelmatozoan debris; silt mostly quartz, some detrital feldspar, muscovite, and altered biotite, black opaque minerals scarce.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
SHIFT downstream about 450 feet, cross drain and fence, continue down in section.			
11. Limestone--fine-grained, mottled, moderate yellowish-brown to pale and dark yellowish-orange on a background between light olive-gray and light gray; silt and very fine sand similar to above; glauconite scarce; wavy bedding, ledges 6 inches and more to massive.	15	230	50 - 65
One thin section from 55 to 60 feet. Limestone--silt, very fine sand, and a few trilobite and pelmatozoan fragments in a cloudy, fine-grained calcite mosaic; silt and sand mostly quartz, much feldspar both authigenic and detrital, the latter mostly brown from weathering, a few opaque minerals; glauconite scarce, limonite stain common.			
SHIFT downstream about 200 feet; continue down in section.			
12. Limestone--fine- to medium-grained; light brownish-gray grading toward light gray, pale yellowish-brown, in part mottled medium yellowish-orange on light olive-gray; very fine sand throughout, coarsens downward, some medium sand in silty lower part, mostly quartz, some detrital feldspar throughout; silt similar to that above; a few beds glauconitic; mica common; many beds oolitic; dolomite rhombs and dolomite replacement of ooids and other objects common; mottled beds wavy bedded; massive.	20	250	30 - 50

Description	Thickness in feet: Interval	Cumulative	Feet above base
Four thin sections from 30 to 50 feet. From 30 to 35 feet, limestone--some sand, dolomite, and phosphatic brachiopod fragments in a mosaic of secondarily enlarged pelmatozoan debris in part replaced by dolomite; sand mostly fine to very fine, angular to well-rounded, mostly quartz, some fresh detrital feldspar; glauconite scarce; many individual dolomite rhombs, 0.1 to 0.3 mm, a few limonite stained. From 35 to 40 feet, limestone--numerous ooids, some sand and pelmatozoan debris, and a few trilobite fragments in a fine-grained calcite matrix; ooids, 0.3 to 0.7 mm, hazy, and in part interfere, crowded with calcite dust, many in part replaced by dolomite; sand mostly angular, very fine; some silt, mostly quartz, some detrital feldspar, a few rhombs, black opaque grains common; glauconite scarce; dolomite replacing ooids 0.01 to 0.05 mm, replacing pelmatozoan(?) grains up to 0.3 mm, in part limonitic where weathered. From 40 to 45 feet, limestone--numerous ooids and rounded pelmatozoan grains in part replaced by dolomite, a few trilobite fragments and intraclasts, some silt and very fine sand in a meager microgranular to aphanitic matrix; ooids mostly hazy, structure radial and concentric, much included calcite dust; dolomite, 0.15 to 0.25 mm, rhombs bordered by some limonitic stain, replaces fossils; intraclasts silty, some oolitic overgrowth; silt and sand mostly quartz and detrital feldspar, some altered opaque minerals, zircon scarce. From 45 to 50 feet, limestone--			

Description	Thickness in feet: Interval	Cumulative	Feet above base
silt, dolomite, phosphatic brachiopod fragments, and much secondarily enlarged pelmatozoan debris in a very fine grained, cloudy calcite matrix; silt mostly quartz, feldspar both detrital and authigenic, much altered biotite; glauconite scarce; dolomite 0.05 to 0.15 mm, patchy distribution and occurs around a burrow, limonitic, replaces matrix and fossils, mostly replaced by calcite; center of burrow coarse-grained, clear calcite.			
Fossils collected from 42 feet are Hardyoides cf. H. tenera (Walcott), Kormagnostus simplex Resser, Meteoraspis cf. M. robusta Lochman, Syspacheilus cf. S. camurus Lochman, Tricrepicephalus sp., Apsotreta orifera Palmer, Paterina sp., and Kinsabia variegata Lochman.			
SHIFT downstream about 600 feet; continue down in section.			
13. Limestone--fine- to medium-grained, light olive-gray, pale to dark yellowish-brown, some light- to moderate-brown; silty, siltier beds reworked by organisms; sandy, sand very fine to medium, larger grains well-rounded, smooth, coated by iron oxide in part with bronzy luster, sandier beds exhibit small cross beds; fossil fragments scarce; massive.	15	265	15 - 30
One thin section from 25 to 30 feet. Limestone--abundant sand, numerous phosphatic brachiopod and a few trilobite fragments in a fine-grained, poikilitic calcite mosaic; sand mostly very fine, angular, mostly quartz, much feldspar mostly detrital both			

Description	Thickness in feet: Interval	Cumulative	Feet above base
weathered and fresh; glauconite scarce; dolomite microgranular, limonitic, very thin beds, mostly replaced by calcite.			
SHIFT downstream about 150 feet; continue down in section.			
14. Limestone and sandstone--mostly limestone fine- to medium-grained; pale yellowish-brown, dark yellowish-brown, moderate yellowish-brown and moderate-brown of several intensities; dolomite rhombs common to abundant; in part silty; sandy, sand fine to coarse, a few grains very coarse, larger grains well-rounded, smooth, iron oxide coated, in part bronzy lustered; a few sandstone beds, very calcareous; small-scale cross-bedding very well displayed; massive.	15	280	0 - 15
Three thin sections from 0 to 15 feet. From 0 to 5 feet, sandstone--matrix very fine grained calcite and limonite; numerous pelmatozoan fragments impregnated by limonite; sand mostly fine, some medium, a few grains coarse, angular to fairly well rounded, limonite coated, mostly quartz with straight extinction, feldspar very scarce; a few limonite grains, spherical, concentric structure; dolomite rhombs, 0.25 mm, scarce, replaces matrix and possibly fossil debris, mostly replaced by calcite. From 5 to 10 feet, limestone--abundant sand, numerous limonite-impregnated trilobite and pelmatozoan fragments, a few phosphatic brachiopod fragments, a few indistinct spicules type B, in a fine-grained, clear calcite mosaic; sand very fine to coarse, angular to well-rounded,			

Description	Thickness in feet Interval	Cumulative	Feet above base
in part limonite-coated, mostly quartz with straight extinction, feldspar scarce; glauconite scarce; dolomite rhombs, 0.25 to 2 mm, replaces fossil debris and matrix, limonite-impregnated, mostly replaced by calcite. From 10 to 15 feet, limestone--abundant sand, a few limonitic trilobite, pelmatozoan, and phosphatic brachiopod fragments in a very fine grained, clear calcite mosaic; sand very fine to medium, some angular, mostly well-rounded, mostly limonite coated, mostly quartz, feldspar scarce; glauconite scarce; dolomite, 0.05 to 0.15 mm, replaces fossil fragments and matrix, limonitic, mostly replaced by calcite.			
Trilobite and phosphatic brachiopod fragments common.			

Table 27. Insoluble residue content, downstream James River section, Mason County, Texas.

Feet above base	Percent residue	Feet above base	Percent residue
245-250	18.1	120-125	21.2
240-245	46.4	115-120	27.1
235-240	46.6	110-115	38.5
230-235	68.2	105-110	56.4
225-230	43.9	100-105	59.2
220-225	31.8	95-100	44.7
215-220	14.4	90-95	49.7
210-215	26.5	85-90	51.2
205-210	27.8	80-85	47.8
200-205	34.2	75-80	53.5
195-200	12.6	70-75	52.9
190-195	31.0	65-70	64.1
185-190	13.1	60-65	46.2
180-185	15.8	55-60	46.3
175-180	11.6	50-55	39.1
170-175	17.6	45-50	18.7
165-170	8.2	40-45	23.8
160-165	19.6	35-40	31.6
155-160	27.1	30-35	43.9
150-155	42.3	25-30	59.7
145-150	28.1	20-25	58.8
140-145	9.0	15-20	43.0
135-140	31.2	10-15	48.7
130-135	15.2	5-10	53.5
125-130	25.4	0-5	45.2

Bluff Creek--Streeter--Leon Creek Area, Mason County, Texas

Bluff Creek Stratigraphic Section

The Bluff Creek section measured and described by Cloud (Cloud and Barnes, 1948) included 18 feet of the Tanyard Formation and 262 feet of the Wilberns Formation. Cloud assigned 260 feet of the Wilberns to the San Saba Member and the remaining 2 feet of stromatolitic limestone to the Point Peak. Additional work in 1960 by Winston and Barnes shows that the stromatolitic bioherm grades laterally to granular limestone of the San Saba Member and that the total thickness of the San Saba in the Bluff Creek section is about 309 feet. A geologic map of the Bluff Creek area is shown in Part 1, Pl. 7, fig. 2.

Fossil identifications found in Bell's card file of collections made by Cloud are as follows: TF-185 (BC 37-37.5), Geragnostus sp., Bayfieldia sp., Euptychaspis sp., Eurekia sp., Idiomesus sp., Keithiella scapane Longacre, Monocheilus truncatus Ellinwood, and Saukiella pyrene (Walcott); TF-186 (BC 41.5-44), Bayfieldia sp., Euptychaspis sp., Eurekia sp., Monocheilus sp., and Saukiella pyrene (Walcott); TF-187 (BC 138), Euptychaspis sp., Idiomesus sp., Saukia sp., Saukiella pyrene (Walcott), and Monocheilus sp.; TF-188a (BC 152), Bayfieldia simata Winston and Nicholls, Euptychaspis jugalis Winston and Nicholls, and Eurekia eos (Hall; TF-191 (BC 237-40), Symphysurina brevispicata Hintze.

Fossil identifications found in Bell's card file without identity of collector were probably made by Ellinwood and are listed as follows: BC-23, Bayfieldia binodosa (Hall), Eurekia granulosa Walcott, Eurekia sp., Idiomesus levisensis Rasetti, Illaenurus quadratus Hall, Keithiella scapane Longacre, Monocheilus truncatus Ellinwood, dikelocephalid frags., and gastropod; BC-34, Geragnostus? insolitus Grant, Bayfieldia binodosa (Hall), Briscoia sp., Monocheilus truncatus Ellinwood, Saukiella pyrene (Walcott), Owenells sp., dikelocephalid frags, and gastropod; BC-36, Bayfieldia binodosa (Hall), Euptychaspis frontalis Longacre, Keithiella scapane Longacre, Plethometopus convergens (Raymond), and Saukiella pyrene (Walcott); BC-41, Geragnostus? insolitus Grant, Bayfieldia binodosa (Hall), Euptychaspis frontalis Longacre, Eurekia granulosa Walcott, Idiomesus levisensis Rasetti, Keithia connexa Rasetti, Keithiella scapane Longacre, Monocheilus truncatus Ellinwood, Plethometopus convergens (Raymond), Saukiella pyrene (Walcott), and Finkelnbergia finkelnbergi (Walcott); BC-42, Geragnostus? insolitus Grant, Bayfieldia binodosa (Hall), Euptychaspis frontalis Longacre, Eurekia granulosa Walcott, Idiomesus levisensis Rasetti, Keithiella scapane Longacre, Monocheilus truncatus Ellinwood, and Saukiella pyrene (Walcott); BC-70, Bayfieldia binodosa (Hall), Plethometopus convergens (Raymond), Saukiella pepinensis (Owen), and Nanorthis sp.; BC-109-110, Bayfieldia simata var. A Winston and Nicholls, Bowmania sp., Euptychaspis kirki Kobayashi, Euptychaspis typicalis Ulrich, Eurekia sp., Idiomesus intermedius Rasetti, Saukia imperatrix Ulrich and Resser, Stenopilus latus Ulrich, and Triarthropsis sp.; BC-149, Bayfieldia simata Winston and Nicholls, Euptychaspis typicalis Ulrich, Eurekia cf. E. eos (Hall), Idiomesus intermedius Rasetti, Saukia imperatrix Ulrich and Resser, Owenella sp., and Sinuella sp.

A portion of this section was resampled by Walker for heavy mineral studies. The residues from Walker's samples supplemented by those prepared by Hendricks (1952) are described following the section description. Cloud's section description (Cloud and Barnes, 1948), modified to fit the concept that the Cambro-Ordovician boundary is within the San Saba Member, is reprinted as follows:

Description of Section

Description	Thickness in feet Interval	Cumulative	Feet above base
Ellenburger Group: 18 feet described			
Tanyard Formation: 18 feet described			
Threadgill Member: 18 feet described			
Calcitic facies: 18 feet described			
1. Limestone, in part slightly dolomitic (altitude approximately 1,630 feet at top of section)--sublithographic to medium grained, in part a granule breccia with matrix and phenoclasts of similar lithology or with matrix slight dolomitic; pearl gray to wood-ash gray with buff to yellow mottles and streaks where dolomitic. The dolomitic inclusions are especially prominent in the lower 8 feet, and the basal foot is a conspicuous buff bed that looks like an earthy dolomite but fizzes strongly upon application of HCl indicating that is is only slightly dolomitic. Beds poorly exposed, probably few of them exceeding a few inches in thickness. In contrast to the darker weathering limestones of the Wilberns Formation below, the limestones in this interval weather conspicuously light gray or even white, with buff to yellow blotches representing the dolomitic portions.	18	18	262-280
Scattered glauconite pellets are present about 5 feet above the base of this interval, and lateral tracing has shown that a 1- to 3-inch conspicuously glauconitic zone is fairly persistent at about this position.			
Fossils are fairly common in this interval, consisting of cross sections in the limestone, but none were collected. *Ophileta* cf. *O. polygyrata* (Roemer) is			

Description	Thickness in feet: Interval	Cumulative	Feet above base
most abundant but Gasconadia cf. G. putilla (Sardeson), Lytospira cf. L. gyrocera (Roemer), and a small blunt brevicone cephalopod also were noted. The lowest Lytospira noted in place in the Bear Spring area was found about 6 feet above the base of the basal buff-mottled bed of the Threadgill Member.			
Base of Threadgill Member (entirely calcitic) of Tanyard Formation at base of interval 1 (altitude about 1,615 feet). Thickness (incomplete) of member and formation in Bluff Creek section 18 feet.			
Moore Hollow Group: 262 feet described			
Wilberns Formation: 262 feet described			
San Saba Member: 262 feet described			
Calcitic facies: 262 feet described			
2. Limestone--microgranular to coarse grained, includes fairly abundant small limestone pellets or micro-ooids and scattered irregularly shaped inclusions as well as individual small buff-weathered dolomite rhombs. Grayish brown to brownish, yellowish, and greenish gray; beds poorly exposed and apparently none over a few inches thick. Weathers medium brownish to bluish gray on the gentle slope where exposed ledges are few.	28	46	234-262
The float in the upper 12 feet of interval 2 appears to be derived largely from the overlying Threadgill Member. However, thin, granular, brownish gray limestone ledges of the Wilberns type of lithology project from several places in the obscured interval.			
Rare grains of sand occur in the lower part of interval 2.			
Scattered globular glauconite occurs throughout the interval and is abundant in some layers.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Plethometopus and other trilobites were collected from 237 to 240 feet (TF-191). Similar trilobites were noted in a ledge at 252 feet and another ledge near the top of the interval, but these were not collected.			
3. Calcareous sandstone and arenaceous limestone, in part slightly dolomitic--fine to medium grained, light yellowish gray with buff and brown streaks, beds 1 to 7 inches thick. Weathers to rough, irregular, poorly exposed, buff to medium brownish gray ledges.	7	53	227-234
The individual grains of sand, like those stratigraphically below, are small, moderately frosted, and subround. However, few pink-stained grains are present. This sand has been traced through most of the Bear Spring area and has been found to maintain a uniform thickness of 7 to 8 feet, to average close to 30 feet of stratigraphic separation from the base of the Threadgill Member above, and to be marked by a concentration of black persimmon bushes so that it shows on the aerial photographs as a narrow dark band.			
Glauconite occurs as scattered pellets, which are locally fairly abundant.			
Trilobite fragments are fairly common in the more coarsely granular limestone lenticles.			
4. Limestone; mostly a zone of flat-pebble (shingle) conglomerate--matrix, phenoclasts, and nonconglomeratic beds varying from microgranular to medium grained, with most conspicuously	28.5	81.5	198.5-227

Description	Thickness in feet: Interval	Cumulative	Feet above base
conglomeratic beds being at 202, 207 to 212, and 214 to 216 feet; medium brownish, yellowish, or olive gray with buff dolomitic streaks, the phenoclasts generally being darker in color than the matrix; beds poorly exposed, apparently not exceeding 8 inches thick. Weathers medium bluish to brownish gray. Scattered grains of glauconite occur in various parts of interval 4 and are conspicuous in a few thin beds but not generally abundant.			
5. Limestone in large part coarsely silty to very finely sandy and slightly dolomitic except for thin zones of flat-pebble conglomerate at 184.5 to 185 and at 198 feet--microgranular to very fine grained, except where conglomeratic; light yellowish gray to buff; beds from a small fraction of an inch to a few inches thick. Weathers to flaggy ledges or scattered slabs of float, dull brownish buff varying to yellowish gray. The abundant, clear, angular grains of detrital silica in the siliceous residues from the rocks average 0.06 to 0.12 mm. in diameter and thus are very fine grained sand. Small flakes of clear mica are scattered among it. Glauconite is uncommon, but it occurs as scattered grains in some beds.	16	97.5	182.5-198.5
6. Calcareous sandstone and arenaceous limestone--very fine to medium grained; yellowish gray to almost white, with russet and buff spots where included dolomite grains have weathered; bedding indistinct, seemingly from 1 to 10 inches thick. Weathers to rough, slabby, medium yellowish or brownish gray ledges which uncommonly vary to buff and brick red. The weathered surface consists of a series of exposed ledges of sandstone and minor covered	21.5	119	161-182.5

Description	Thickness in feet: Interval	Cumulative	Feet above base
intervals with arenaceous limestone float. The sand grains in both the limestone and the sand, like that stratigraphically below, are small, moderately frosted, and subrounded to rounded. In general they seem less well rounded and less frosted than the sand in the Gorman Formation of the Ellenburger Group; and many are stained pinkish orange, whereas the sand grains in the Gorman Formation are clear and untinted. Occasional glauconite grains occur but are uncommon except in the lower few inches which are quite glauconitic.			
7. Limestone--fine to medium grained, with occasional flat-pebble inclusions; mottled in yellowish and greenish grays; beds 1 to 10 inches thick. Weathering rough, medium bluish to brownish gray, poorly exposed in upper portion. Locally contains scattered globular glauconite. Fossils occur throughout interval 7, with Owenella, other small gastropods of unknown affinities, and trilobite fragments being common. Owenella was collected in the basal foot of the interval (TF-189) and small, unidentified gastropods resembling in their general form Dirhachopea and Sinuopea were collected at 159 to 160 feet (TF-190).	8	127	153-161
8. Limestone, in part with irregular inclusions and abundantly scattered individual rhombs of dolomite; a conspicuous flat-pebble conglomerate in the top 5 inches--coarse to fine grained, with scattered individual ooids and irregularly shaped	21.5	148.5	131.5-153

Description	Thickness in feet: Interval	Cumulative	Feet above base
inclusions of various types throughout; medium to light brownish to yellowish gray; beds 1 to 12 inches thick. Weathers slabby, rough to smooth, medium to dark brownish to bluish gray. Lower 2 feet poorly exposed. Rare sand grains occur in the lower half and scattered to locally abundant sand grains in the upper half of interval 8. Glauconite occurs as a few scattered globules in various parts of the interval and is fairly abundant in a thin bed a little below the middle. Calvinella and other trilobites were collected at 138 feet (TF-187). The gastropod Owenella was noted at 148 feet. At 150 feet the upper surface of the rock is crowded with narrowly conical fossils averaging 0.8 to 1.0 inch long and 0.2 inch in diameter at the wide end, composed of several similar cones packed one inside the other, and suggesting a primitive Salterella-like cephalopod (TF-188). Owenella and fragmentary trilobites were collected at 152 feet (TF-188a).			
9. Limestone; in considerable part arenaceous, similar to that of interval 11--weathers as interval 11, except that the upper 7 feet weather to a lighter buff or even to a medium bluish gray color. The rock is very sandy, grading to calcareous sandstone, from 114.5 to 115.5, 123 to 125, and 126 to 126.5 feet. In the intervening portions it tends to be silty. Glauconite is generally uncommon, but scattered grains occur in a few thin beds.	20.5	169	111-131.5

Description	Thickness in feet: Interval	Cumulative	Feet above base
Trilobite fragments occur in the more calcareous and coarsely grained rocks in this interval.			
10. Limestone--medium to fine grained, yellowish to brownish gray, beds 1 to 9 inches thick. Weathers to inconspicuous, medium to light bluish gray ledges.	6	175	105-111
Sand and glauconite are uncommon except that locally the top 4 inches of the interval are conspicuously arenaceous. Coarse silt grains are fairly common in the upper part of the interval.			
11. Silty and slightly dolomitic limestone with occasional pockets and beds of sand--the limestone is mostly very fine grained, grading to medium grained. It generally appears buff to brick red on a broken surface, but this is probably due to deep oxidation of the permeable rock, and the color of a truly fresh surface is probably closer to the light gray exhibited by some specimens. Beds 1 to 15 inches thick. Very small individual buff-weathered rhombs of dolomite may be seen in the freshest samples of the limestone. It weathers to conspicuous, slabby to irregular, buff to brick or cinnamon red ledges.	30	205	75-105
Calcareous sandstone occurs from 79.5 to 80.5 feet and 90 to 102.3 feet. The sand grains are small, subround to round, and frosted. Except in the intervals noted, sand is rare in interval 11 directly in the line of section, but pockets of similar sand may be seen to occur sporadically throughout most of the interval when it is traced laterally.			
Glauconite is very rare or absent in this interval.			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
12.	Limestone, in part slightly dolomitic --coarse to fine grained; light yellowish gray to buff, grading to almost white; beds 1 to 7 inches thick. Weathers to medium bluish to brownish gray, platy ledges. Sand and glauconite grains occur sporadically but are uncommon. Coarse silt grains are fairly common toward the top of the interval.	8	213	67-75
13.	Arenaceous limestone with pockets of calcareous sandstone--the limestone is mostly medium grained, light brownish to yellowish gray, and in beds 2 to 25 inches thick. Weathers rough, buff, with the principal 25-inch bed forming a conspicuous break in slope. The sand grains are small, moderately frosted, and fairly well rounded. Glauconite is fairly common in the lower half of the interval, but inconspicuous in the upper part.	7	220	60-67
14.	Limestone; with minor irregular inclusions of dolomite and grading laterally to dolomitic limestone and calcitic dolomite in the upper 3 feet, and with conspicuous dolomitic inclusions at 45 to 48 feet--medium grained to microgranular, with occasional lenticles of coarsely granular fossiliferous rock; principally medium brownish gray, grading to greenish gray, light yellowish gray, brown, and buff; beds 1 to 11 inches thick. The rock is filled with all sorts of inclusions --micro-ooids, irregularly shaped pelletlike bodies of various kinds, and individual buff-weathered dolomite rhombs--but no conspicuously oolitic beds were noted. Weathers to conspicuous, uneven, medium brownish to bluish gray ledges that grade to buff where dolomitic.	22.5	242.5	37.5-60

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	A little coarse silt and an occasional small sand grain occur in the lower half of this interval. Glauconite grains are scattered throughout the interval and a few conspicuously glauconitic beds were present. Fragments of trilobites occur throughout the interval, especially from 39 to 42 feet. Small trilobites and a small, high-spired gastropod were collected from 41.5 to 44 feet (TF-186).			
15.	Limestone; conspicuously dolomitic at 35-36 feet--differs from the limestone in intervals 16 mainly in being more noticeably granular, ranging from microgranular to medium grained. Beds average a few inches thick but range from 1 to 14 inches. Globular glauconite is conspicuous in several thin zones in this interval. Trilobite fragments are scattered throughout interval 15, especially at 23, 24, and 34 feet. Agnostids, Prosaukia, and small unidentified trilobites were collected from a 6-inch zone at the top of the interval (TF-185).	23.5	266	14-37.5
16.	Limestone, in part with irregular inclusions of dolomite--microgranular to fine grained, with scattered to abundant micro-ooids and tiny hollow rod- to spindle-shaped bodies and in part truly oolitic; medium brownish to greenish tones of gray, irregularly streaked and speckled throughout with darker brown spots of glauconite; beds 1 to 5 inches thick. Weathers irregularly, medium to dark brownish to bluish gray, in part with yellowish reticulations where dolomitic.	12	278	2-14

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Green globules of glauconite are scattered throughout interval 16, and the top 6 inches is extremely glauconitic. Occasional fragments of trilobites were seen but not collected. Silicified Billingsella was collected elsewhere in the Bear Spring area from rocks thought to be stratigraphically close to interval 16 (TF-154, TF-177), but none was seen in the Bluff Creek section.			
17.	Limestone with minor inclusions of dolomite--microgranular to sublithographic, with scattered ooids and occasional small patches of calcite; medium to light brownish to olive gray, with browner mottles and green spots of glauconite. Weathers to an irregular hummock with a medium bluish gray surface. A few scattered grains of glauconite were seen. Interval 17 comprises the top of a stromatolitic bioherm similar to those occurring all along Bluff Creek from the mouth of Gunstock Draw to Llano River.	2	280	0-2

Description of Insoluble Residues

Position above base in feet	Description of residue
270-280	Common; mostly silt, a few grains of very fine sand; silt mostly feldspar both detrital with authigenic overgrowth and authigenic with rhombs abundant; glauconite scarce; a few clay aggregates.
260-270	Very scarce; mostly dolomoldic clay aggregates, some silt similar to above.
245-260	Common to abundant; mostly silt and very fine sand, mostly detrital feldspar in part with authigenic overgrowth, rhombs common, quartz abundant; a few medium sand grains in middle sample; glauconite and clay aggregates common.
240-245	Scarce; mostly medium to coarse sand, clay aggregates, and glauconite.
200-240	Common; mostly silt and clay; some very fine sand, a few fine to medium sand grains in upper half, well-rounded to angular from authigenic overgrowth; silt mostly detrital feldspar with some authigenic overgrowth, a few rhombs, quartz abundant; glauconite common.
185-200	Abundant; mostly very fine sand, some fine sand, mostly quartz, some detrital feldspar in part with authigenic overgrowth, rhombs scarce; silt and glauconite very scarce.
160-185	Very abundant except from 165 to 170 feet; mostly fine to medium quartz sand, a few coarse grains well-rounded to subrounded, frosted to polished, some authigenic overgrowth, mostly straight extinction, composite grains scarce, many grains stained pink.
135-160	Common; mostly quartz sand, clay and glauconite; sand in upper 10 feet fine to very fine, rest mostly fine to coarse, well-rounded, frosted from solution pitting, some authigenic overgrowth, mostly straight extinction, some undulatory extinction, composite grains scarce; silt scarce, mostly authigenic feldspar rhombs, some detrital centers; glauconite common.
110-135	Very abundant; mostly silt and sand; sand mostly fine and very fine, some medium and coarse from 110 to 115 and 120 to 125 feet, larger grains well-rounded, polished to frosted from solution pitting, some secondary growth; silt and fine and very fine sand about equally detrital feldspar and quartz, rhombs scarce, heavy minerals common to abundant; glauconite scarce.

Position above base in feet	Description of residue
105-110	Common; similar to above.
95-105	Very abundant; mostly sand, very fine to medium, a few coarse grains, well-rounded, much authigenic overgrowth; some silt and clay; silt and very fine sand about equally quartz and detrital feldspar, a few larger grains of detrital feldspar, feldspar mostly weathered dark; heavy minerals fairly common.
70-95	Very abundant; mostly silt and very fine sand, some fine sand, some medium to coarse sand from 75 to 85 feet; detrital feldspar scarce to abundant in silt and very fine sand sizes, mostly weathered dark.
60-70	Fairly abundant; mostly sand and silt; sand very fine to medium,some coarse in lower sample, larger grains mostly frosted with much overgrowth, a few smooth; silt and very fine sand mostly quartz, much detrital feldspar; glauconite common.
35-60	Common; mostly silt, very fine sand and glauconite, a few clay aggregates, a few fine to medium sand grains in upper sample; silt and very fine sand mostly feldspar both authigenic and detrital with authigenic overgrowth, numerous rhombs, abundant quartz.
30-35	Common; mostly glauconite, some silt; fine to very fine sand and clay aggregates scarce.
15-30	Common; mostly silt and clay, glauconite common, a few very fine to medium sand grains; silt mostly feldspar both authigenic and detrital with authigenic overgrowth, rhombs common, quartz abundant.
10-15	Common; mostly glauconite; a few fine to medium sand grains, silt scarce; irregular, granular, quartzose fragments of silicified fossils common; a hexactenellid spicule.
0-10	Common; mostly silt, glauconite abundant; irregular, granular, quartzose fragments of silicified fossils common in upper sample; silt mostly feldspar both authigenic and detrital with authigenic overgrowth, rhombs abundant, quartz common.

Table 28. Heavy mineral frequency counts, Bluff Creek section, Mason County, Texas (counts made by T. R. Walker).

Member	Sample Interval (feet)	Zircon				Tourmaline			Garnet			Rutile			Other Minerals			
		Total	Clear	Zoned	Dusty	Total	Brown	Green	Total	Colorless	Pink	Total	Amber	Foxy red	Anatase	Altered ilmenite	Leucoxene	Black opaque
San Saba	165-170	20.7	18.7	0.3	1.7	0.3	0.0	0.3	1.3	1.0	0.3	1.0	0.7	0.3	3.0	15.0	52.3	6.0
	120-125	25.3	19.7	0.7	5.0	5.3	0.7	4.7	1.7	1.7	0.0	3.0	3.0	0.0	9.3	27.7	27.7	0.0
	85-90	64.0	43.3	7.0	13.7	2.3	1.0	1.3	1.3	1.3	0.0	2.7	2.7	0.0	4.0	8.3	17.3	0.0

Table 29. Insoluble residue content, Bluff Creek section, Mason County, Texas.

Feet above base	Percent residue	Feet above base	Percent residue
235-240	3.1	140-145	5.6
230-235	11.4	135-140	3.7
220-225	7.6	130-135	24.5
215-220	4.8	125-130	41.3
210-215	3.7	120-125	40.8
205-210	4.3	115-120	46.7
200-205	4.9	110-115	34.1
195-200	15.4	105-110	5.3
190-195	28.2	100-105	60.0
185-190	23.5	95-100	51.1
180-185	46.0	90-95	62.6
175-180	58.2	85-90	60.3
170-175	47.2	80-85	65.0
165-170	13.8	75-80	57.7
160-165	62.3	70-75	30.3
155-160	3.8	65-70	15.0
150-155	2.6	60-65	12.4
145-150	7.9		

Streeter Stratigraphic Section

The top of the section is about 2.6 miles west of Streeter, 1.4 miles west of Bluff Creek, and along the south side of U.S. Highway 377, just inside a pasture fence. The top of the section is probably at the top of the Morgan Creek Limestone Member of the Wilberns Formation. The base of the section is in the south road ditch of U.S. Highway 377, 1.3 miles west of Streeter, 400 feet west of Bluff Creek, and starts at a fault (Part 1, Pl. 8, fig. 3). During the spring of 1950, Barnes described the section and Ellinwood collected fossils from the Wilberns. Previously, Palmer collected fossils from the Riley. A geologic map of the Streeter area is shown in Part 1, Pl. 8, fig. 3.

For most of the Cambrian sections of the Llano region, Bell updated the original fossil lists, but for the Wilberns collections in the Streeter section this was not accomplished. Bell's original lists, although not greatly different from the updated ones in other sections, should be cross-checked against Longacre (1970) for trilobite species above the base of the *Eoorthis* Bed. For each species treated, Longacre lists each section and each footage in the section at which the species occurs.

Thicknesses of units in the Streeter section are as follows:

Stratigraphic unit	Thickness (ft)	Position above base of section (ft)
Moore Hollow Group (581 feet measured)		
Wilberns Formation (163 feet measured)		
Morgan Creek Limestone Member	141	440-581
Welge Sandstone Member	22	418-440
Riley Formation (418 feet measured)		
Lion Mountain Sandstone Member	29	389-418
Cap Mountain Limestone Member	273	116-389
Hickory Sandstone Member	116+	0-116

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 581 feet described			
Wilberns Formation: 163 feet described			
Morgan Creek Limestone Member: 141 feet thick			
1. Limestone--coarse-grained in lower part, finer grained upward; pale-red	131	131	450-581

Description	Thickness in feet: Interval	Cumulative	Feet above base
in lower part, lighter red upward verging on grayish pink at about 460 feet, above this mostly yellowish-brown, and pale yellowish-brown; mostly glauconitic; sandy in lower part; mica common in upper part; dolomite patches, dark yellowish-orange, common from 470 to 475 and at 516 and 554 feet, dolomitized fossil fragments and other objects common in many beds in upper part; exposures very poor from about 475 to 500 and 555 to 581 feet.			
Elvinia zone trilobites abundant at 470 feet; Irvingella at 474 feet; Eoorthis, not found, should occur at about 475 feet; Billingsella forms a coquinite at 478 feet; above 478 feet, many beds contain Billingsella and trilobites.			
Fossils collected by Ellingwood from 474 feet, Comanchia amplooculata (Frederickson), Irvingella major Ulrich and Resser, Angulotreta aff. microscopica (Shumard), Linnarssonella girtyi Walcott, and linguloids "acutangula" and cf. Pseudodicellomus; from 475 feet, Angulotreta aff. microscopica (Shumard) and linguloids "acutangula"; from 478 feet, Billingsella coloradoensis (Shumard), Parabolinoides contractus Frederickson, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), and Angulotreta aff. triangularis Palmer; from 480 feet, Billingsella coloradoensis (Shumard), Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Orygmaspis llanoensis (Walcott), var. A Longacre; from 481 feet, Orygmaspis llanoensis (Walcott), Wilbernia halli Resser, var. A Ellinwood, Billingsella coloradoensis (Shumard), and Eoorthis remnicha (Winchell); from 484 feet Orygmaspis llanoensis (Walcott), Taenicephalus cf. T. gouldi Frederickson),			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Billingsella coloradoensis (Shumard), and Pseudodicellomus mosaicus (Bell); from 494 feet, Taenicephalus shumardi (Hall), Billingsella texana Bell, Angulotreta microscopic (Shumard), and Pseudodicellomus mosaicus (Bell); from 508 feet, Billingsella coloradoensis (Shumard); from 511 feet, Taenicephalus shumardi (Hall), Wilbernia expansa Frederickson, Billingsella coloradoensis (Shumard), Pseudagnostus cf. P. communis Hall and Whitfield; from 514 feet, Taenicephalus shumardi (Hall); from 520 feet, Taenicephalus shumardi (Hall) and Wilbernia expansa Frederickson; from 528 feet, Idahoia lirae (Frederickson) and Wilbernia diademata (Hall); from 531 feet, Saratogia americana (Lochman and Hu); from 536 feet, Saratogia americana (Lochman and Hu) and Saratogia fria Lochman and Hu; from 541 feet, Drumaspis texana Resser, Ptychaspis bullasa Lochman and Hu, Saratogia americana (Lochman and Hu), Sinuella minuta Knight, and Wilbernia sp.; from 572 feet, Saratogia americana (Lochman and Hu), Wilbernia expansa Frederickson, and Billingsela sp.; from 574 feet, Pseudagnostus cf. P. communis Hall and Whitfield, and Billingsella cf. B. corrugata Ulrich and Cooper; from 574.5 feet, Saratogia americana (Lochman and Hu), Wilbernia pero (Walcott), and Ptychaspis bullasa Lochman and Hu; from 575 feet, Pseudagnostus cf. P. communis Hall and Whitfield, and Saratogia americana (Lochman and Hu); from 578 feet, Billingsella cf. B. corrugata Ulrich and Cooper; Pseudagnostus cf. P. communis Hall and Whitfield, Ptychaspis bullasa Lochman and Hu, Wilbernia expansa Resser, and Saratogia americana (Lochman and Hu).			
SHIFT through culvert to north side of road; continue down in section along road.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
2. Limestone--coarse-grained, pale-red to grayish-red, some calcareous sandstone at base, less sandy upward.	10	141	440-450
Welge Sandstone Member: 22 feet thick			
3. Sandstone--mostly medium-grained, some fine- and coarse-grained; grayish-orange, pale yellowish-orange to dark yellowish-orange, light-brown; in part burrowed; massive.	22	163	418-440
Riley Formation: 418 feet described Lion Mountain Sandstone Member: 29 feet thick			
4. Greensand, limestone, shale and sandstone--greensand, mostly grayish olive-green, where slightly weathered still green but with moderate reddish-brown streak, with additional weathering very dusky red with dusky-red streak, final product of weathering blackish-red, hard, hematite nodules containing phosphatic brachiopod fragments and sand grains which break across; about half glauconite, grades to sandstone with very little glauconite. Sandstone in lower part mostly fine-grained, thin-bedded; in upper part coarse-grained, massive, many poorly preserved phosphatic brachiopods; mostly greenish-gray, dark yellowish-orange spots common; some beds much burrowed. Shale between yellowish-gray and dusky-yellow, alternates with other rock types and occurs as thin-bedded intervals. Limestone light-gray to greenish-gray to almost white, the latter is cross-beds of trilobite coquinite in greensand; in lower part beds continuous, sandy, glauconitic.	29	192	389-418

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected from 393 feet, Aphelaspis walcotti Resser, Glaphyraspis ornata (Lochman); from 396 feet, Angulotreta triangularis Palmer; from 412 feet, Aphelaspis walcotti Resser.			
Cap Mountain Limestone Member: 273 feet thick			
5. Limestone--mostly fine-grained, some medium- and coarse-grained beds toward top; light olive-gray speckled by moderate yellowish-brown dolomite that appears to have replaced ooids and other objects; in part mottled, perhaps from burrows; in part glauconitic; in part silty, shaly and silty beds common in upper part; top few feet sandy, sand fine.	114	306	275-389
Fossils collected from 287 feet, Diraphora sp., Opisthotreta depressa Palmer, Kinsabia variegata Lochman, spicule type B; from 295 feet, Coosella beltensis Lochman, Meteoraspis metra (Walcott), Diraphora sp., Opisthotreta depressa Palmer, spicule type B; from 325 feet, Coosina cf. C. ariston (Walcott), Diraphora sp., and spicule type B; from 369 feet, Coosia cf. C. albertensis Resser, Llanoaspis peculiaris (Resser), Coosina cf. C.ariston (Walcott), Pseudagnostus(?) nordicus Lochman, Tricrepicephalus thoosa (Walcott), and Opisthotreta depressa Palmer; from 387 feet, Aphelaspis Walcotti Resser, Glaphyraspis ornata (Lochman), and Dictyonina perforata Palmer.			
SHIFT to south side of highway; continue down in section eastward.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
6. Limestone, siltstone, and covered--limestone fine-grained; light olive-gray mottled by medium to light yellowish-orange dolomite; dolomite perhaps fills burrows; in part silty; beds 6 to 12 inches. Siltstone grayish-orange, much burrowed, in part may be leached silty limestone. Covered from 193 to 199 and 225 to 233, rest in part poorly exposed. Fossils collected from 162 feet, (?)Ankoura cf. A. apicalis Duncan, Meteoraspis cf. M. robusta Lochman, Syspacheilus cf. S. camurus Lochman, and trilobite gen. and sp. undet.; from 183 feet, Ankoura cf. A. apicalis Duncan, Blountia sp., Meteoraspis cf. M. robusta Lochman, Syspacheilus cf. S. camurus Lochman, Tricrepicephalus sp., Paterina sp., and Kinsabia variegata Lochman.	113	419	162-275
7. Siltstone, limestone and sandstone--siltstone moderate yellowish-brown, possibly burrowed, trails common on bedding surfaces, massive, phosphatic brachiopods abundant in some beds, trilobites scarce. Limestone pale yellowish-brown to light olive-gray; many small cross-beds. Sandstone mostly moderate yellowish-brown to moderate-brown, some streaks of grayish-red; calcareous, first significant carbonate 116 feet above base of section produces a topographic break; mostly massive, in part cross-bedded. Fossils collected from 130 feet, Cedaria eurycheilos Palmer.	46	465	116-162
Hickory Sandstone Member: 116 feet described			
8. Sandstone--mostly medium- to fine-grained, some coarse-grained, grains up to 0.1 inch; grayish-red to very	95	560	21-116

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	dusky red, in part streaked moderate yellowish-brown, a few fine-grained beds dark yellowish-brown, others from 67 to 69 feet grayish-orange mottled moderate yellowish-brown, brown predominant above 105 feet; grains well-rounded, poorly sorted, coated by red iron oxide that in part is layered as in ooids; cross-beds common; a few sets of ripple marks, 2 inches from crest to crest, preserved by overlying shale; shale blackish-red, films and beds up to 0.25 of an inch, trails common; sandstone massive in lower part. Fossils collected from 105 feet, Cedaria eurycheilos Palmer and Kormagnostus simplex Resser; phosphatic brachiopods common.			
9.	Sandstone--medium- to fine-grained, very dusky red to grayish-red, grains coated by red iron oxide that in part is layered as in ooids, poorly exposed. Fossils collected at base, Cedarina cordillerae (Howell and Duncan).	21	581	0-21

Composite Leon Creek Stratigraphic Section

Plummer (1943) described sandstone in the Wilberns Formation in the Leon Creek area, and Cloud and Barnes (1948) measured 40 feet of sandstone in a faulted bluff on the west side of Leon Creek 0.9 mile southeast of Erna. In 1950, Barnes measured and described 154 feet of the San Saba Member on the east side of Leon Creek (Leon Creek section) and recognized that Morgan Creek Limestone and intervening rocks are present and that a section probably could be pieced together; Ellinwood collected fossils from this interval. However, a complicated pattern of high-angle faults precluded the measuring of this portion of the section. A geologic map of the Leon Creek area is shown in Part 1, Pl. 8, fig. 5.

Two of Bell's students, Alexander (1956) and Winston (1957), chose the Leon Creek area for master's theses and measured and described six additional sections but not enough to complete the middle part of the San Saba Member. A possible correlation of the seven sections with each other and with the Bluff Creek section is shown in figure 13. The composite Leon Creek section was compiled from four sections--Deer Run, Leon Creek, Sheep Pen Hollow, and Eckert's Crossing. The Red Bluff, Spring Hollow, and Skunk Bend sections, not used in the composite sections, furnish supplementary information. The geologic map of the Leon Creek area by Alexander (1956) and Winston (1957) shows the location of all sections.

The fossil lists for the Leon Creek and Red Bluff sections were updated by Bell from August to October 1968. The fossil lists have not been updated for the Eckert's Crossing, Spring Hollow, and Sheep Pen Hollow sections. Bell's original lists, although not greatly different from the updated ones in other sections, should be cross-checked for the latter three sections against Longacre (1970) for trilobite species above the base of the Eoorthis Bed. For each species treated, Longacre lists each section and each footage in the section at which the species occurs.

Thicknesses of the units in the Leon Creek area are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Ellenburger Group (152.5 feet measured)		
Tanyard Formation (152.5 feet measured)		
Threadgill Member (152.5 feet measured)		
Calcitic facies	152.5+	364-516.5
Moore Hollow Group (364 feet measured)		
Wilberns Formation (364 feet measured)		
San Saba Member (253 feet measured)		
Calcitic facies	253+	111-364
Point Peak Member	71	40-111
Morgan Creek Limestone Member	40+	0-40

Deer Run Segment

Rocks measured in the Deer Run section include 152.5 feet of the Tanyard Formation and 4.5 feet of the Wilberns Formation. The top of the section is at a fault in a hillside west of Leon Creek at a point 1,600 feet west-northwest of the old headquarters of the L. B. Eckert ranch. The base of the section, 650 feet northeast of its top, is in the bed of Leon Creek at the mouth of Deer Run; this point is 1,500 feet northwest of the old headquarters of the L. B. Eckert ranch. The section was measured by Alexander and C. C. Both and described by Alexander and Winston in April 1955.

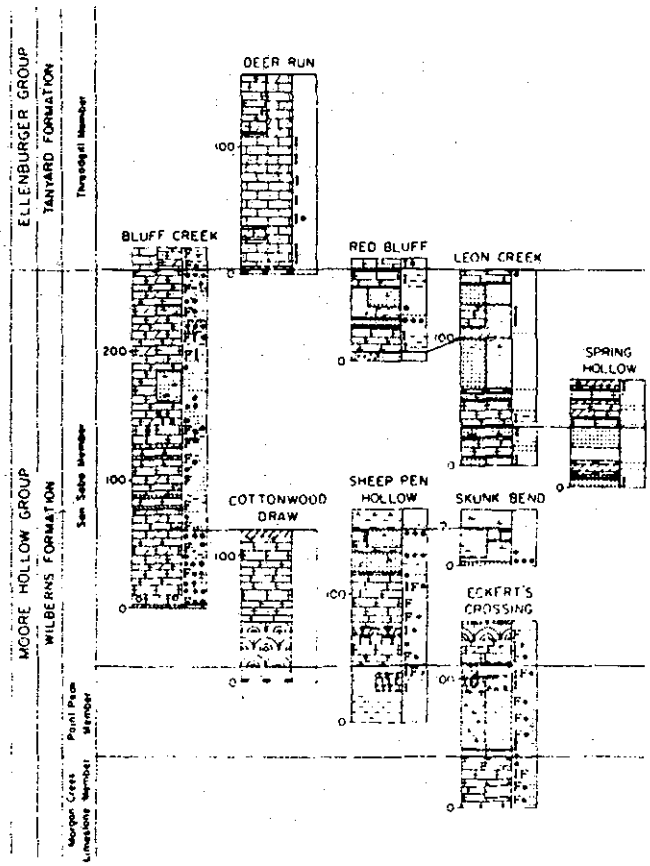

Figure 13. Correlation of sections in the Leon Creek area, Mason County, Texas.

Description of Section

	Thickness in feet Interval	Cumulative	Feet above base
Ellenburger Group: 152.5 feet described Tanyard Formation: 152.5 feet described Threadgill Member: 152.5 feet described			
1. Limestone--aphanitic to very fine grained; woodash-gray to medium-gray smooth beds weather light-gray, rough beds medium-gray; mostly dolomitic especially basal bed, dolomite produces ropy appearance along bedding, more abundant than in interval 2; beds 1 to 4 inches. Fossils at 120 feet are Lytospira, Ophileta, and unidentified cephalopods.	47	47	110-157
2. Limestone--aphanitic; woodash-gray to light-gray, weathers medium-gray; mostly intraformational conglomerate, both pebbles and matrix aphanitic; mostly slightly dolomitic, prominent ledges from 74 to 75 and 85 to 88 feet show more dolomitic weathering with a ropy surface; scattered glauconite at 39 feet; beds mostly 1 to 6 inches, from 67 to 70 feet, 6 to 12 inches, slabby, smoother weathering than in interval 3. Fossils at 75 feet, Hystricurus; throughout interval, Ophileta and Lytospira.	72	119	38-110
3. Limestone--aphanitic- to fine-grained; light- to medium-gray, weathers medium-gray with tan mottles; dolomitic, more so in upper part, produces a hackly appearance; beds 1 to 3 inches.	11	130	27-38
4. Limestone--aphanitic; woodash-gray to light-gray, weathers light-gray with an irregular surface; in part dolomitic with tan dolomite splotches, very fine grained; in part small pebble intraformational conglomerate,	21	151	6-27

Description	Thickness in feet: Interval	Cumulative	Feet above base
both pebbles and matrix aphanitic; beds less than an inch to 2 inches, poorly exposed in line of section.			
5. Dolomite--fine-grained; yellow to buff, weathers tan; calcite inclusions; beds 1 to 6 inches.	1.5	152.5	4.5-6.0
This buff bed is persistent throughout the area and is easily traced. Its base was chosen as the boundary between the Wilberns and Ellenburger and is well exposed in the creek bed, 100 yards to the north.			
Moore Hollow Group: 4.5 feet described			
Wilberns Formation: 4.5 feet described			
San Saba Member: 4.5 feet described			
Calcitic facies: 4.5 feet described			
6. Limestone--mostly very fine grained, some fine-grained; bluish-gray to medium-gray, weathers medium-gray to tannish-gray with irregular surface; slightly dolomitic; beds a fraction of an inch to 3 inches.	4.5	157	0-4.5

Leon Creek Segment

The rocks measured in the Leon Creek section belong to the upper 154 feet of the San Saba Member. The top of the section is 850 feet northeast of a prominent bend in Leon Creek and about 1.3 miles southeast of the point where U.S. Highway 183 crosses Leon Creek. The base of the section is in the bed of a prominent bend of Leon Creek and about 1.4 miles southeast of the point where U.S. Highway 183 crosses Leon Creek. The section was measured by Barnes, and fossils were collected from it by Ellinwood in 1950. Additional fossil collections were made by Winston in 1954. The footage for fossils collected by Ellinwood may not correspond exactly to the footage in Winston's (1957, p. 47) measured section.

The top of the section is in an area of poor exposure and approximately at the base of the Threadgill Member of the Tanyard Formation. The Threadgill Member here is composed of aphanitic limestone, fine-grained limestone, intraformational conglomerate, and much yellowish-orange dolomite. If exposures were better, the contact might be placed at a higher level.

Description of Section

Description	Thickness in feet Interval	Cumulative	Feet above base
Moore Hollow Group: 154 feet described			
Wilberns Formation: 154 feet described			
San Saba Member: 154 feet described			
Calcitic facies: 154 feet described			
1. Limestone--fine-grained, some fine-grained glauconite, thin-bedded, poorly exposed.	7	7	147-154
Fossils collected by Winston from 147 feet, Symphysurina brevispicata Hintze and Hystricurus cf. H. sp. D of Ross; from 148 feet, Hystricurus millardenis Hintze, Symphysurina brevispicata Hintze, and gastropod?; from 153 feet, Symphysurina brevispicata Hintze.			
Fossils collected by Ellinwood from 151 feet, Symphysurina brevispicata Hintze and gastropod.			
2. Limestone--coarse-grained, upper part sandy, lower part trilobitic, beds 6 to 10 inches.	4.5	11.5	142.5-147
Fossils collected by Winston from 144 feet, Symphysurina brevispicata Hintze and gastropods.			
Fossils collected by Ellinwood from 143 feet, Symphysurina brevispicata Hintze and gastropod.			
SHIFT about 300 feet southward; continue down in section westward.			
3. Sandstone--fine- to medium-grained, grayish-orange, grains well-rounded.	16.5	28	126-142.5
4. Limestone and dolomite--limestone fine- to medium-grained, much intraformational conglomerate, beds 4 to 8 inches, alternate with covered intervals. Dolomite pale yellowish-orange in a recessive interval from 116 to 121 feet indicates that all covered intervals may be dolomite.	17.5	45.5	108.5-126

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Winston from 108.5 feet, Highgatella cordilleri (Lochman) and Symphysurina bubops Winston and Nicholls; from 123 feet, Highgatella cordilleri (Lochman), Symphysurina bubops Winston and Nicholls, syntrophid brachiopod, and mollusca.			
SHIFT about 1,000 feet southward, cross two faults, continue down in section westward.			
5. Dolomite--fine-grained; grayish-orange to light-brown; very sandy, sand very fine; massive, forms bold outcrop.	7.5	53	101-108.5
6. Sandstone--fine- and medium-grained; below 75 feet some streaks and mottles of reddish-orange, above 75 feet very light yellowish-gray, in part stained moderate yellowish-brown; in part calcareous, top foot very calcareous; large scale cross-beds.	42	95	59-101
7. Limestone--fine-grained; thin bedded, beds average about 2 inches.	3	98	56-59
Fossils collected by Winston from 56 feet, Corbinia apopsis Winston and Nicholls.			
8. Limestone--coarse-grained, mostly sandy, beds 6 inches.	4	102	52-56
Fossils collected by Winston from 52 feet, Bowmania sagitta Winston and Nicholls, Briscoia llanoensis Winston and Nicholls, Euptychaspis kirki Kobayashi, Idiomesus levisensis (Rasetti), Saukiella planata Winston and Nicholls, Saukiella serotina Longacre, Stenopilus latus Ulrich, Eurekia sp., and Saukia sp.; from 53 feet, Acheilops masonensis Winston and Nicholls, Apatokephaloides clivosus Raymond,			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Corbinia apopsis Winston and Nicholls, Idiomesus levisensis (Rasetti), Leiobienvillia leonensis Winston and Nicholls, Triarthropsis nitida Ulrich, Calvinella prethoparia Longacre, Saukiella serotina Longacre, saukid fragments, and Owenella sp.; from 53.3 feet, Acheilops masonensis Winston and Nicholls, Apatokephaloides clivosus Raymond, Corbinia apopsis Winston and Nicholls, Plethometopus obtusus Rasetti, Triarthropsis nitida Ulrich, and hypostomes; from 53.5 feet, Acheilops masonensis Winston and Nicholls, Apatokephaloides clivosus Raymond, Corbinia apopsis Winston and Nicholls, Idiomesus levisensis (Rasetti), Triarthropsis nitida Ulrich, and Leiobienvillia leonensis Winston and Nicholls; from 53.8 feet, Corbinia apopsis Winston and Nicholls; from 54 feet, Euptychaspis kirki Kobayaski, Eurekia eos (Hall), Saukiella serotina Longacre, Theodenisia brevis (Rasetti), and unknown trilobite sp.; from 55 feet, Apatokephaloides clivosus Raymond, Corbinia apopsis Winston and Nicholls, orthid brachiopod, and gastropod; from 55.5 feet, Acheilops masonensis Winston and Nicholls, Corbinia apopsis Winston and Nicholls, Idiomesus levisensis (Rasetti), Leiobienvillia leonensis Winston and Nicholls, Plethometopus obtusus Rasetti, Triarthropsis nitida Ulrich, Triarthropsis princetonensis Kobayashi, hypostomes, and orthid brachiopod.			
Fossils collected by Ellinwood from 48 feet, Acheilops masonensis Winston and Nicholls, Apatokephaloides clivosus Raymond, Corbinia apopsis Winston and Nicholls, Idiomesus levisensis Rasetti, Leiobienvillia leonensis Winston and Nicholls, and Plethometopus obtusus Rasetti; from 48.8 feet, Saukiella serotina Longacre.			

	Description	Thickness in feet Interval	Cumulative	Feet above base
9.	Sandstone--medium-grained, calcareous, massive.	5	107	47-52
10.	Limestone--from 31 to 32 feet, trilobitic intraformational conglomerate; from 32 to 33 feet, thin-bedded, shaly; from 33 to 33.5 feet, medium-grained, light-gray; from 33.5 to 40 feet, sandy; from 40 to 47 feet, fine-grained. Fossils collected by Winston from 31 feet, Bayfieldia simata Winston and Nicholls and Finkelnburgia finkelnburgi (Walcott); from 32 feet, Bayfieldia simata Winston and Nicholls, Eurekia eos (Hall), Saukiella serotina Longacre, and Finkelnburgia sp.; from 32.4 feet, Briscoia llanoensis Winston and Nicholls, Calvinella procera Winston and Nicholls, Euptychaspis jugalis Winston and Nicholls, Euptychaspis kirki Kobayashi, Idiomesus levisensis (Rasetti), Pletometopus covergens (Raymond), and Saukiella planata Winston and Nicholls; from 32.5 feet, Finkelnburgia sp. and Leiocoryphe cf. L. longiceps Rasetti; from 32.8 feet, Calvinella tenuisculpta Walcott; from 33 feet, Bayfieldia simata Winston and Nicholls, Calvinella tenuisculpta Walcott, Euptychaspis kirki Kobayashi, Prosaukia remora Longacre, Saukiella serotina Longacre, and Stenopilus latus Ulrich; from 33.5 feet, Bayfieldia simata Winston and Nicholls, Calvinella tenuisculpta Walcott, Saukiella serotina Longacre, Stenopilus latus Ulrich, and dikelocephalid fragments; from 34 to 36 feet, Bayfieldia simata Winston and Nicholls, Idiomesus levisensis (Rasetti), Stenopilus latus Ulrich, and dikelocephalid	16	123	31-47

Description	Thickness in feet Interval	Cumulative	Feet above base
fragments; from 35.6 feet, Keithiella patula Winston and Nicholls, and Finkelnburgia sp.; from 35.7 feet, Bayfieldia simata Winston and Nicholls, Calvinella procera Winston and Nicholls, Calvinella tenuisculpta Walcott, Eurekia eos (Hall), Euptychaspis kirki Kobayashi, Plethometopus convergens (Raymond), Saukiella serotina Longacre, Keithiella patula Winston and Nicholls, and Finkelnburgia sp.; from 39 feet, Calvinella procera Winston and Nicholls, Eurekia eos (Hall), Euptychaspis kirki Kobayashi, Keithiella patula Winston and Nicholls, Plethometopus convergens (Raymond), Saukiella serotina Longacre, Idiomesus levisensis (Rasetti), and Finkelnburgia sp.; from 40 feet, Bayfieldia simata Winston and Nicholls, Bowmania americana (Walcott), Bowmania pennsylvanica (Rasetti), Briscoia llanoensis Winston and Nicholls, Calvinella procera Winston and Nicholls, Euptychaspis kirki Kobayashi, Eurekia eos (Hall), Idiomesus levisensis (Rasetti), Plethometopus convergens (Raymond), Prosaukia remora Longacre, Saukiella serotina Longacre, Stenopilus latus Ulrich, and orthid brachiopod; from 42.5 feet, Stenopilus latus Ulrich; from 44 feet, Bayfieldia simata Winston and Nicholls, Briscoia llanoensis Winston and Nicholls, Calvinella prethoparia Longacre, Euptychaspis kirki Kobayashi, Eurekia eos (Hall), Idiomesus levisensis (Rasetti), Keithiella patula Winston and Nicholls, Saukiella planata Winston and Nicholls, Saukiella serotina Longacre, Stenopilus latus Ulrich, and Triarthropsis sp.; from 44.5 feet, Bayfieldia simata Winston and Nicholls; from 45 feet,			

Description	Thickness in feet Interval	Cumulative	Feet above base
Bayfieldia simata Winston and Nicholls, Bowmania sagitta Winston and Nicholls, Briscoia llanoensis Winston and Nicholls, Calvinella prethoparia Longacre, Calvinella procera Winston and Nicholls, Euptychaspis kirki Kobayashi, Idiomesus levisensis (Rasetti), Plethometopus convergens (Raymond), Prosaukia remora Longacre, Saukiella planata Winston and Nicholls, Saukiella serotina Longacre, Stenopilus latus Ulrich, Theodenisia brevis (Rasetti), uniden. pygidia, and gastropod; from 45.4 feet, Bayfieldia simata Winston and Nicholls, Bowmania sagitta Winston and Nicholls, Briscoia llanoensis Winston and Nicholls, Calvinella prethoparia Longacre, Calvinella procera Winston and Nicholls, Euptychaspis kirki Kobayashi, Idomesus levisensis (Rasetti), Saukiella serotina Longacre, Stenopilus latus Ulrich; from 45.8 feet, Bowmania americana (Walcott), Bowmania sagitta Winston and Nicholls, Briscoia llanoensis Winston and Nicholls, Calvinella prethoparia Longacre, Calvinella procera Winston and Nicholls, Euptychaspis kirki Kobayashi, Idiomesus levisensis (Rasetti), Saukiella planata Winston and Nicholls, and hypostomes.			
Fossils collected by Ellinwood from 32 feet, Bayfieldia simata Winston and Nicholls, Eurekia eos (Hall), Idiomesus levisensis Rasetti, Saukiella cf. S. pepinensis (Owen), and Saukiella aff. S. serotina Longacre.			
11. Sandstone--medium-grained, between grayish-yellow and yellowish-gray; from 22 to 26 feet, calcareous, top foot an intraformational conglomerate; from 26 to 31 feet, friable.	9	132	22-31
SHIFT about 400 feet upstream; continue down in section down bluff.			

Description	Thickness in feet Interval	Cumulative	Feet above base
12. Limestone--fine-grained; moderate reddish-orange to moderate reddish-brown; much silt or very fine sand, mostly quartz.	9	141	13-22
13. Limestone--coarse-grained, somewhat finer upward; grayish-orange; upper half sandy.	6	147	7-13
Fossils collected by Winston from 11 feet, Bayfieldia simata Winston and Nicholls, Euptychaspis jugalis Winston and Nicholls, Idiomesus levisensis (Rasetti), Saukia imperatrix Ulrich and Resser, Owenella(?) sp., and orthid(?) brachiopod.			
14. Sandstone--fine- and medium-grained, very pale orange, calcareous, rests on intraformational conglomerate.	7	154	0-7
Fossils collected by Winston from 2 feet, Stenopilus(?) sp. and saukiid pygidium.			

Sheep Pen Hollow Segment

Rocks measured in the Sheep Pen Hollow section include 45 feet of the Point Peak Member and 121 feet of the San Saba Member. A fault crosses the section 20 feet above its base. The top of the section is at the top of the south bank of Sheep Pen Hollow and 250 feet west of the road at a point 1,800 feet airline north-northeast of the Wes Eckert ranch headquarters. The base of the section is in the bed of Sheep Pen Hollow 2,000 feet airline east-northeast of its top and 3,450 feet airline northeast of the Wes Eckert ranch headquarters. A power line passes by the base of the section.

The section was measured and described by Alexander and Winston in August 1954. Alexander made fossil collections, took chip samples of the carbonate rocks at 2-foot intervals, and prepared acetic acid residues. The constituents reported below are listed in order of decreasing abundance for that part of the residue which is of inorganic origin. The notation "shell fragments" refers to inarticulate brachiopod fragments. Alexander (1956) did not distinguish feldspar from quartz; consequently, the listing and order

given here vary from his thesis. Mica is mostly hydrobiotite and muscovite; these are distinguished only for samples examined with the petrographic microscope.

Description of Section

Description	Thickness in feet Interval	Cumulative	Feet above base
Moore Hollow Group: 166 feet described			
Wilberns Formation: 166 feet described			
San Saba Member: 121 feet described			
Calcitic facies: 121 feet described			
1. Siltstone--olive-tan with gray streaks, greener towards base; top bed calcareous; beds in upper part 6 to 12 inches, toward base thin-bedded and shaly.	15	15	151-166
2. Sandstone and limestone--mostly sandstone medium-grained; dark-green, olive-green, tan; calcareous at top with highly glauconitic zones, grades to sandy limestone at base; thick- to medium-bedded, lower 10 feet poorly exposed across road. Limestone from 140 to 141 feet, medium-grained; white; abundant saukid trilobites; concealed by road in line of section, exposed on south bank just east of road; residue at 140 feet, dolomite, quartz, sand fine to coarse.	14	29	137-151
Fossils collected by Alexander from 140 feet, Bayfieldia binodosa (Hall), Euptychaspis frontalis Longacre, and Saukiella pyrene (Walcott).			
3. Siltstone--olive-green, 4-inch beds.	3	32	134-137
4. Sandstone--medium-grained; tan at top, very green and glauconitic from 120 to 125 feet; calcareous, especially from 117 to 120 feet; beds 3 to 6 inches, poorly exposed; residue at 118 feet, dolomite, glauconite, quartz, sand fine; at	17	49	117-134

Description	Thickness in feet: Interval	Cumulative	Feet above base
120 feet, dolomite, glauconite, quartz, clay (limonitic, dolomoldic), sand fine to medium. Fossils collected by Alexander from 127 feet, undet. free cheek.			
5. Limestone--medium-grained; light-gray, weathers to light colored, irregular surface; beds 4 to 6 inches; residue at 114 feet, quartz, dolomite, glauconite, shell fragments, sand medium to coarse, subrounded to fairly well-rounded, mostly rough from reconstitution, a few grains polished; at 116 feet, dolomite, feldspar, shell fragments. Fossils collected by Alexander from 114 feet, Bayfieldia binodosa (Hall) and Saukiella pyrene (Walcott); from 114.5 feet, Illaenurus quadratus Hall, Saukiella pyrene (Walcott), Billingsella rhomba Ellinwood, Bayfieldia binodosa (Hall), and Owenella sp.	3	52	114-117
6. Limestone--intraformational conglomerate, matrix fine- to medium-grained; light-gray, weathers dark-gray with tan splotches; beds 2 to 6 inches, lower part poorly exposed; residue at 102 feet, dolomite, quartz, clay (limonitic, dolomoldic), shell fragments, sand medium to coarse; at 104 feet, feldspar, dolomite, glauconite, shell fragments; at 106 feet, feldspar, quartz, glauconite, shell fragments, sand medium to coarse; at 108 feet, feldspar, dolomite, clay (limonitic, dolomoldic), glauconite, shell fragments; at 110 feet, dolomite, limonitic clay, glauconite, shell fragments; at 112 feet, feldspar, clay (limonitic, dolomoldic), glauconite, shell fragments.	12	64	102-114

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Alexander from 103 feet, Bayfieldia binodosa (Hall), Euptychaspis sp. and dikelocephalid fragments; from 106.5 feet, Eurekia granulosa Walcott, and dikelocephalid fragments; from 110 feet, Dikelocephalus sp., Eurekia granulosa Walcott, and Saukiella pyrene (Walcott).			
SHIFT about 200 feet southeasterly up hill following bed at 110 feet; continue in section down slope in easterly direction.			
7. Limestone--coarse- to medium-grained, alternating in lower part; medium-gray, mottled tan; beds to 3 to 6 inches; coarse-grained beds less resistant, very fossiliferous; residue at 90 feet, glauconite (some limonitic alteration), shell fragments, a gastropod; at 92 feet, dolomite, glauconite, clay (limonitic, dolomoldic); at 94 feet, dolomite; at 98 feet, dolomite, clay (limonitic, dolomoldic); at 100 feet, dolomite, clay (limonitic, dolomoldic), feldspar, shell fragments.	12	76	90-102
Fossils collected by Alexander from 90 feet, Owenella sp., dikelocephalid fragments, and medium and high spired gastropods; from 91 feet, Illanenurus quadratus Hall, and Eurekia granulosa Walcott; from 93 feet, Bayfieldia binodosa (Hall), Keithiella scapane Longacre, Pseudagnostus cf. P. communis (Hall and Whitfield), Illaenurus quadratus Hall, Monocheilus truncatus Ellinwood, and orthid brachiopod; from 94 feet, Illaenurus quadratus Hall, Eurekia granulosa Walcott, and orthid brachiopod; from 95 feet, Illaenurus quadratus Hall, Pseudagnostus of P. communis (Hall and Whitfield),			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Billingsella rhomba Ellinwood, Eurekia granulosa Walcott, and Bayfieldia binodosa (Hall); from 96.5 feet, Bayfieldia binodosa (Hall), Illaenurus quadratus Hall, Monocheilus truncatus Ellinwood, Billingsella rhomba Ellinwood, and Eurekia granulosa Walcott; from 98 feet, Bayfieldia binodosa (Hall), and dikelocephalid fragments; from 99 feet, Bayfieldia binodosa (Hall); from 99.5 feet, dikelocephalid fragments; from 100 feet, Illaenurus quadratus Hall.			
SHIFT 460 feet east-northeast across draw and up slope to prominent limestone bed that weathers greenish-gray, follow bed 725 feet around hill to north, continue down in section.			
8. Limestone--medium-grained; greenish-gray, weathers dark greenish-gray; glauconitic; forms bench, beds 8 inches; residue at 88 feet, glauconite, dolomite, limonitic clay, quartz, shell fragments, sand medium, very scarce.	2	78	88-90
9. Limestone--fine-grained, greenish-gray to tan, some glauconite, beds 2 to 6 inches; residue at 82 feet, glauconite, dolomite, feldspar, limonitic clay, shell fragments; at 84 feet, dolomite, glauconite, hematite, shell fragments; at 86 feet, dolomite, glauconite, limonitic clay, quartz, sand medium, very scarce.	7	85	81-88
Fossils collected by Alexander from 85.5 feet, Idiomesus levisensis Rasetti, and dikelocephalid fragments; from 86 feet, Owenella sp., Saukiella pyrene (Walcott), Briscoia sp., and high spired gastropod; from			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	87 feet, Illaenurus quadratus Hall, Monocheilus truncatus Ellinwood.			
10.	Limestone--fine- to medium-grained, gray to tan, weathered globules of glauconite, beds 4 to 8 inches; residue at 76 feet, glauconite, feldspar, quartz, shell fragments, sponge spicules, a few medium sand grains, mostly silt; at 78 and 80 feet, dolomite, glauconite, limonitic clay, silicified brachiopod fragments.	5	90	76-81
11.	Limestone--intraformational conglomerate, medium-gray, some glauconite, beds 2 to 4 inches.	1	91	75-76
12.	Limestone--ring-shaped stromatolitic bioherms 10 feet in diameter; not well-exposed in line of section, exposed 100 feet to south; residue at 70 feet, dolomite, glauconite, shell fragments, sponge spicules; at 72 feet, glauconite, feldspar, sponge spicules, shell fragments; at 74 feet, dolomite, limonitic clay, sponge spicules, shell fragments.	6	97	69-75
	Fossils collected by Alexander from 69 feet, Briscoia sp., Owenella sp., and high-spired gastropod.			
13.	Limestone--fine-grained; light-tan, glauconite gives some beds a greenish cast; beds 6 to 12 inches; residue at 56 feet, dolomite, glauconite, sponge spicules; at 58, 60, 62, 64, 66, and 68 feet, dolomite (fine-grained rhombs), feldspar very scarce (detrital to authigenic, rhombs common).	14	111	55-69

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Alexander from 68 feet, Billingsella rhomba Ellinwood.			
14. Limestone--fine- to medium-grained; mostly varicolored, brown, tan, pearl, a few galuconite grains; lower beds gray, slightly to moderately glauconitic; beds 6 to 12 inches; residue at 46 feet, feldspar, glauconite, mica, quartz, shell fragments, silt; at 48 feet, glauconite, limonitic clay, feldspar, mica, quartz, shell fragments; at 50 feet, dolomite, some limonitic clay; at 52 feet, dolomite, glauconite, some limonitic clay; at 54 feet, feldspar, glauconite, mica, quartz, silt very abundant, in part aggregated.	10	121	45-55
Point Peak Member: 45 feet described			
15. Shale--brown, calcareous in part; residue at 42 to 44 feet, feldspar, glauconite, clay (limonitic, dolomoldic), quartz, silicified brachiopod fragments, silt very abundant, in part aggregated.	4.5	125.5	40.5-45
16. Limestone--intraformational conglomerate, medium-grained; gray, mottled tan; silicified brachiopods common; residue at 40 feet, feldspar, glauconite, clay (limonitic, dolomoldic), quartz, mica, silicified brachiopod fragments, silt very abundant, in part aggregated.	0.5	126	40-40.5
Fossils at 40.5 feet, Plectotrophia alata (Walcott), Billingsella corrugata inornata Ellinwood.			

Description	Thickness in feet Interval	Cumulative	Feet above base
17. Shale and limestone--limestone intraformational conglomerate beds 5 to 8 inches alternating with shale intervals 2 to 3 feet; silicified sponge spicules and brachiopod fragments common; residue at 36 feet, feldspar (detrital to authigenic, rhombs very abundant), glauconite, quartz, hydrobiotite, muscovite, sponge spicules, silicified brachiopod fragments, silt very abundant, in part aggregated; at 38 feet, feldspar, glauconite, quartz, sponge spicules, silt very abundant, in part aggregated.	12	138	28-40
18. Limestone and shale--limestone intraformational conglomerate, medium-gray with greenish-gray and tan mottled, two beds separated by 1 foot of shale; silicified sponge spicule and brachiopod fragments in upper bed.	3	141	25-28
19. Shale--green to olive, thin-bedded.	25	166	0-25

A fault cuts the section at 20 feet.

Eckert's Crossing Segment

Rocks measured in the Eckert's Crossing section include 40 feet of the Morgan Creek Limestone Member, 71 feet of the Point Peak Member, and 36 feet of the San Saba Member. Small faults and folds in the Point Peak preclude an accurate measurement of this part of the section. The top of the section is at the top of a hill 3,300 feet east-southeast of the Ed Eckert ranch headquarters. Its base is in the bed of Leon Creek 600 feet downstream (east) from Eckert's Crossing and 1,700 feet airline southeast of the top of the section.

The section was measured and described by Alexander and Winston in August 1954. Alexander made fossil collections, took chip samples of the carbonate rocks at 2-foot intervals, and prepared acetic acid residues. The constituents reported below are listed in order of decreasing abundance for that part of the residue that is of inorganic origin. The notation "shell fragments" refers to inarticulate brachiopod fragments. Alexander (1956) did not distinguish feldspar from quartz and occasionally confused dolomite

with chert, consequently the listing and order given here vary from his thesis. Mica is mostly hydrobiotite and some muscovite; these are distinguished only for samples examined with the petrographic microscope.

Description of Section

Description	Thickness in feet Interval	Cumulative	Feet above base
Moore Hollow Group: 147 feet described			
Wilberns Formation: 147 feet described			
San Saba Member: 36 feet described			
Calcitic facies: 36 feet described			
1. Limestone--stromatolitic bioherms, aphanitic, light-gray, mottled tan, 8 to 10 feet in diameter; surrounded by fine- to medium-grained, tan-mottled limestone; residue at 132 feet, dolomite, limonitic clay; at 134 feet, limonitic clay; at 136 feet, feldspar, limonite.	15	15	132-147
2. Limestone--fine- to medium-grained; finely mottled gray, tan, and green, upper beds grayer; beds in lower part 8 to 10 inches, in upper part 3 to 12 inches, consisting of intraformational conglomerate and interbedded shale; residue at 122 feet, clay (limonitic, dolomoldic), glauconite, feldspar (very scarce); at 124 feet, clay (limonitic, dolomoldic), dolomite, glauconite, feldspar; at 126 feet (very scarce), quartz, dolomite, shell fragments, sand medium to coarse; at 128 feet (very scarce), dolomite, glauconite; at 130 feet, dolomite (hollow rhombs).	10	25	122-132
3. Limestone and shale--limestone fine- to medium-grained, mottled green and tan, beds approximately 10 inches, poorly exposed, interbedded with shale; residue at 114 feet (very scarce), dolomite, limonitic clay, quartz; at 116 feet (very scarce), limonitic clay, dolomite, quartz, glauconite, sand medium; at 120 feet, dolomite, limonitic clay, glauconite, feldspar, silicified brachiopod fragments, silt.	9	34	113-122

Description	Thickness in feet: Interval	Cumulative	Feet above base
4. Limestone--intraformational conglomerate, matrix fine- to medium-grained, tan splotched; residue at 111 feet, feldspar (mostly detrital, much authigenic overgrowth, rhombs very abundant), hydrobiotite, glauconite, quartz, silt, sand very fine; at 112 feet, feldspar, clay (limonitic, dolomoldic), mica, glauconite, quartz, silicified brachiopod fragments, silt, very fine sand.	2	36	111-113
Point Peak Member: 71 feet described			
5. Shale and limestone--mostly shale, thin interbeds of limestone intraformational conglomerate, poorly exposed; residue at 102 feet, feldspar (mostly detrital, much authigenic overgrowth, many rhombs), glauconite, mica, quartz, silicified brachiopod fragments, mostly sand very fine, some silt; at 104 feet, feldspar, glauconite, mica, quartz; at 106 feet, feldspar, glauconite, mica, quartz, silt, sand very fine; at 108 and 110 feet, feldspar, quartz, glauconite, mica, silicified brachiopod fragments; at 110 feet, some clay (limonitic, dolomoldic). Fossils collected by Alexander from 99 and 103 feet, *Billingsella corrugata inornata* Ellinwood, and *Plectotrophia alata* (Walcott).	12	48	99-111
6. Shale and limestone--3- to 6-inch intraformational conglomerate beds alternating with shale intervals up to 2.5 feet. Fossils collected by Alexander from 90 feet, *Plectotrophia alata* (Walcott) and hexactinellid spicules.	9	57	90-99

Description	Thickness in feet: Interval	Cumulative	Feet above base
SHIFT about 200 feet south; continue down in section down slope.			
7. Limestone and shale--mostly limestone intraformational conglomerate, medium-grained, gray, mottled tan and green, some gray shale near middle.	2	59	88 - 90
8. Shale and siltstone--olive; siltstone calcareous; residue at 67 feet, feldspar (mostly detrital, some authigenic overgrowth), glauconite, mica, quartz, silt, sand very fine.	40.5	99.5	47.5 - 88
Fossils collected by Alexander from 50 feet, possibly Pseudodicellomus?; from 55 feet, Ellipsocephaloides silvestris Resser, and Pseudodicellomus?; from 60 feet, Ellipsocephaloides silvestris Resser, Pseudodicellomus?, and indet. trilobite fragments; from 65 feet, indet. brachiopods; from 67 feet, Chariocephalus whitfieldi Hall.			
9. Limestone--intraformational conglomerate, gray, mottled and streaked by tan, beds 2 to 4 inches.	1.5	101	46 - 47.5
10. Shale and siltstone--olive- to boxcar-red, siltstone calcareous, interbedded with shale, beds a fraction of an inch to 2 inches.	5	106	41 - 46
11. Limestone and shale--aphanitic to fine-grained, stromatolitic bioherms 1 to 2 feet in diameter, 6 to 18 inches high; with shale, light gray between.	1	107	40 - 41
SHIFT southeasterly around edge of bank following bioherm horizon.			
Morgan Creek Limestone Member: 40 feet described			
12. Limestone--medium-grained; brown, weathers tan; some glauconite and light gray crystals.	1	108	39 - 40

	Description	Thickness in feet: Interval	Cumulative	Feet above base
13.	Limestone and shale--limestone medium- to coarse-grained, light-gray with tan splotches, glauconitic, beds 3 to 6 inches, interbedded with shale. Fossils collected by Alexander from 35 feet, Ptychaspis bullasa Lochman & Hu, Saratogia fria Lochman & Hu, and Wilbernia pero (Walcott); from 36 feet, Drumaspis texana Resser and Saratogia fria Lochman & Hu; from 37 feet, Billingsella texana Resser; from 38 feet, Drumaspis texana Resser.	6	114	33 - 39
14.	Limestone--intraformational conglomerate, gray, mottled tan and brown; very glauconitic, glauconite fine-grained; beds 3 to 6 inches; residue at 30 feet, dolomite, quartz, feldspar, glauconite, limonitic clay, mica, sand fine; at 32 feet, dolomite, clay (limonitic, dolomoldic), glauconite, quartz, feldspar, sand very fine. Fossils collected by Alexander from 30 feet, Saratogia americana (Lochman & Hu), Wilbernia expansa Frederickson, Wilbernia pero (Walcott), Billingsella texana? Bell, and pelmatozoan fragments; from 32.5 feet, Saratogia americana (Lochman & Hu).	3	117	30 - 33
15.	Limestone--medium- to coarse-grained, light- to medium-gray, very glauconitic, intraformational conglomerate at 19 feet; beds 5 to 7 inches; residue at 20 feet, glauconite, quartz, dolomite (replaces pelmatozoan debris and trilobites), hematite, shell fragments, sand coarse to very coarse, angular to fairly well rounded; at 21.5 feet, quartz, feldspar, glauconite, clay (limonitic, dolomoldic), shell fragments, sand fine to medium; at 22 feet, glauconite, quartz, feldspar, mica, dolomite (replaces pelmatozoan debris), shell fragments; at 22.5 feet,	11	128	19 - 30

Description	Thickness in feet: Interval	Cumulative	Feet above base
quartz, feldspar, glauconite, shell fragments, sand very fine, silt; at 24 feet, quartz, feldspar, glauconite, hematite, mica, shell fragments, sand very fine; at 26 feet, quartz, feldspar flauconite, clay (limonitic, dolomoldic), mica, shell fragments, sand very fine to very coarse; at 28 feet, quartz, clay (limonitic, dolomoldic), feldspar, glauconite, sand fine to medium.			
Fossils collected by Alexander from 20 feet, Billingsella coloradoensis (Shumard) and Pseudodicellomus mosaicus (Bell); from 20.5 feet, Wilbernia diademata (Hall), Wilbernia expansa Frederickson, and Idahoia lirae (Frederickson); from 21.5 feet, Wilbernia diademata (Hall), Wilbernia expansa Frederickson, Idahoia lirae (Frederickson), and Angulotreta microscopica (Shumard); from 22 feet, Angulotreta microscopica (Shumard) and Pseudodicellomus mosaicus (Bell); from 22.5 feet, Pseudodicellomus aff. P. mosaicus (Bell); from 24 feet, Pseudodicellomus aff. P. mosaicus (Bell); from 25 feet, Ptychaspis bullasa Lochman & Hu, Saratogia americana (Lochman & Hu, Wilbernia expansa Frederickson, and Wilbernia pero (Walcott); from 26 feet, Ptychaspis bullasa Lochman & Hu, Wilbernia expansa Frederickson, Wilbernia pero (Walcott), and Saratogia americana (Lochman & Hu); from 29 feet, Wilbernia pero (Walcott) and Billingsella sp.			
16. Limestone--aphanitic to very fine grained, medium-gray, a stromatolitic biostrome composed of elliptical rings about 10 to 14 inches in diameter; glauconite, fine- to medium-grained, is between the stromatolites.	0.5	128.5	18.5 - 19

SHIFT about 400 feet east to top of cliff; continue down in section.

	Description	Thickness in feet: Interval	Cumulative	Feet above base
17.	Limestone and shale--mostly limestone fine- to medium-grained, glauconitic, beds a fraction of an inch to 12 inches; shale medium-gray; residue at 10, 12, and 14 feet, quartz, feldspar, glauconite, sand fine to medium; at 16 feet, dolomite, a little glauconite, hydrobiotite, muscovite and feldspar; at 18 feet, dolomite (in part replaces ooids), a little hydrobiotite. Fossils collected by Alexander from 9 feet, Pseudagnostus cf. P. communis (Hall & Whitfield), Taenicephalus shumardi (Hall), and Wilbernia expansa Frederickson; from 14 feet, Pseudagnostus cf. P. communis (Hall & Whitfield), Taenicephalus shumardi (Hall), Huenella texana (Walcott), Pseudodicellomus mosaicus (Bell), and Taenicephalus sp.,; from 14.5 feet, Wilbernia expansa Frederickson.	9.5	138	9 - 18.5
18.	Limestone--medium-grained, medium-gray except that glauconite produces an over-all dark-green color, glauconite fine-grained, irregularly bedded; residue at 6 and 8 feet, quartz, feldspar, glauconite, shell fragments, sand mostly fine to very fine. Fossils collected by Alexander from 5 feet, Pseudodicellomus mosaicus (Bell); from 6 feet, Taenicephalus shumardi (Hall), Billingsella coloradoensis (Shumard), and Pseudodicellomus mosaicus (Bell); from 7 feet, Taenicephalus shumardi (Hall) and Billingsella coloradoensis (Shumard).	4	142	5 - 9

	Description	Thickness in feet: Interval	Cumulative	Feet above base
19.	Limestone--coarse-grained at base, medium-grained toward top; light-gray; glauconite at base coarse-grained, finer grained upward; scattered sand grains in lower part; beds 6 to 18 inches; residue at base, about equally detrital feldspar (in part twinned, some authigenic overgrowth) and quartz, glauconite, shell fragments, sand fine to very fine; at 2 feet, quartz, feldspar, glauconite, dolomite (replaces pelmatozoan debris and ooids?), "*Dicellomus mosaica*," sand fine to medium; at 4 feet, quartz, feldspar, glauconite, shell fragments, sand fine to medium. Fossils collected by Alexander from 1 foot, *Taenicephalus shumardi* (Hall), *Wilbernia expansa* Frederickson, and *Billingsella coloradoensis* (Shumard); from 1.5 feet, pelmatozoan columnals; from 2 feet, *Billingsella coloradoensis* (Shumard); from 3 feet, *Billingsella coloradoensis* (Shumard) and *Pseudodicellomus mosaicus* (Bell); from 3.5 feet, *Taenicephalus shumardi* (Hall) and *Billingsella coloradoensis* (Shumard); from 4.5 feet, *Pseudodicellomus mosaicus* (Bell).	5	147	0 - 5

Red Bluff Segment

Rocks measured in the Red Bluff section include 8.5 feet of the Tanyard Formation and 72.5 feet of the Wilberns Formation. The top of the section is at the top of a hill 800 feet airline northwest of the L. B. Eckert ranch headquarters and 20 feet west of the road between the headquarters of the L. B. Eckert and Miss Lily Eckert ranches. The base of the section is on the east bank of Leon Creek 500 feet upstream from the mouth of Horsepen Hollow. The section was measured and described by Winston in January 1955, who also collected and described the fossils.

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Ellenburger Group: 8.5 feet described			
Tanyard Formation: 8.5 feet described			
Threadgill Member: 8.5 feet described			
1. Limestone--very fine grained to aphanitic; light-gray, fresh bedding surfaces weather smooth, light-gray; slightly glauconitic; tan dolomite mottles from 74.5 to 77.5 feet; some intraformational conglomerate; thin, irregular beds up to 2 inches.	6.5	6.5	74.5 - 81
2. Dolomite--fine-grained; light yellowish-tan, weathers deep yellowish-brown; somewhat calcareous; beds 1 to 5 inches.	2	8.5	72.5 - 74.5
Moore Hollow Group: 72.5 feet described			
Wilberns Formation: 72.5 feet described			
San Saba Member: 72.5 feet described			
Calcitic facies: 72.5 feet described			
3. Limestone--alternating, medium-grained resistant beds and very fine to fine-grained, less resistant, thin-bedded argillaceous intervals. Resistant beds from 59.5 to 60, 63 to 63.5, and 65.5 to 66 feet, cement reddish-tan to white; weathers medium-gray; from 70 to 71.5 feet, intraformational conglomerate, very fine to fine grained, light-gray, weathers medium-gray. Argillaceous intervals, light-gray, bedding surfaces light greenish-yellow irregular; some intraformational conglomerate; beds up to 1 inch, weather out and cover slope.	15.5	24	57 - 72.5
Fossils collected by Winston from 60-61 feet, *Symphysurina brevispicata* Hintze.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
SHIFT 150 feet south along outcrop; continue down in section.			
4. Sandstone--mostly medium-grained; top 2 feet fine-grained, tan with white calcareous cement, weathers deep yellowish-brown; rest dark-red from calcareous red cement; grains subround to well-rounded and frosted; massively bedded, weathers with pits and irregular surfaces.	14	38	43 - 57
5. Sandstone and shale--sandstone from 35.4 to 37.5 and 39.7 to 41 feet, fine-grained; light-tan to yellow, weathers deep tan; calcareous; grains well sorted, subangular; massive. Shale green, weathers tan; very sandy, sand fine; glauconitic; friable, forms covered slope in line of section.	7.6	45.6	35.4 - 43
6. Limestone--intraformational conglomerate, medium-grained, light-gray pebbles and tan granules in a sandy, coarse-grained matrix; glauconitic.	1.4	47	34 - 35.4
7. Sandstone--from 29.4 to 31 feet, fine- to medium-grained, extremely glauconitic, somewhat friable; from 31 to 34 feet, fine-grained, glauconitic, abundant laminae of tan, dolomitic shale, thin-bedded; forms covered slope in line of section.	4.5	51.6	29.4 - 34
8. Limestone--medium-grained; light-gray to tan, weathers grayish-tan; glauconitic, globules up to 2 mm long; dolomitic; massive.	1.4	53	28 - 29.4
9. Limestone--intraformational conglomerate, fine to very fine grained, light-gray, beds resistant, 2 to 3 inches; from 26 to 27 feet, argillaceous, thin-bedded, irregular surfaces.	4.5	57.5	23.5 - 28

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Fossils collected by Winston from 26-26.5 feet, Highgatella cordilleri (Lochman), high-spired gastropod, and linguloid.			
10.	Limestone--mostly very fine grained; light-gray, weathers light greenish-gray; arbillaceous; from 17.5 to 19 and 21.5 to 22 feet, intraformational conglomerate; thin-bedded, most beds less than 1 inch, surfaces irregular, From 22 to 23.5 feet, fine-grained, tan, dolomitic, argillaceous.	8.5	66	15 - 23.5
11.	Limestone--intraformational conglomerate and interbedded shaly beds; pebbles in intraformational conglomerate, fine-grained, light-gray mottled tan; some small snail impressions; beds 4 to 10 inches. Shaly limestone, fine-grained, light-gray, irregularly laminated, beds less than 1 inch to 2 inches.	6.5	72.5	8.5 - 15
	Fossils collected by Winston from 8.6 feet, Highgatella cordilleri (Lochman), Symphysurina bubops Winston & Nicholls, and undet. pygidium; from 10.8 feet abundant high-spired gastropods; from 13.2 feet, Homagnostus reductus Winston & Nicholls, Hystricurus millardensis Hintze, Missisquoia typicalis Shaw, and Symphysurina bubops Winston & Nicholls; from 13.5 feet, Symphysurina bubops Winston & Nicholls.			
12.	Sandstone--lower part, medium-grained dark-red, grains well-sorted, well-rounded; upper part, coarse-grained, flesh pink from white and pink cement, massive, grains well-rounded, frosted.	8.5	81	0 - 8.5

Spring Hollow Segment

The 85 feet of rock measured in the Spring Hollow section belongs to the San Saba Member. The top of the section is at the crest of a steep hill 1,300 feet south-southwest of the L. B. Eckert ranch headquarters and 40 feet south of the road between the Sam Eckert and L. B. Eckert ranch headquarters. The base of the section is in the bed of Spring Hollow 40 feet west of a fence that crosses the creek and 1,650 feet south of the L. B. Eckert ranch headquarters. The section was measured and described by Winston in January 1955, who also collected and described fossils from it.

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 85 feet described			
Wilberns Formation: 85 feet described			
San Saba Member: 85 feet described			
1. Dolomite and limestone--mostly fine-grained dolomite; yellow to tan, weathers tan, smooth, occasional pink tinge; somewhat calcareous; beds up to 6 inches. Limestone intraformational conglomerate from 82 to 82.5 feet.	4.5	4.5	80.5-85
2. Sandstone--fine grained; pink with red patches, top foot yellow; calcareous.	3.5	8	77-80.5
3. Limestone--coarse- to medium-grained; white in part with reddish-tan patches, fossil impressions tan, weathers medium-gray to tan; lower 6 inches sandy; beds up to 6 inches.	8.5	16.5	68.5-77
Fossils collected by Winston from 71 feet, *Euptychaspis kirki* Kobayashi and *Owenella* sp.; from 72 feet, *Apatokephaloides clivosus* Raymond, *Corbinia apopsis* Winston and Nicholls, *Leiobienvillia leonensis* Winston and Nicholls, *Acheilops masonensis* Winston and Nicholls, and *Triarthropsis princetonensis* Kobayashi.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
4. Dolomite--fine-grained, yellowish-tan, calcareous, beds up to 3 inches.	3	19.5	65.5-68.5
5. Limestone--from 61 to 62.5 feet, coarse-grained, tan, very fossiliferous, beds 6 inches to 1 foot; from 62.5 to 65.5 feet, medium-grained, white, sandy, sand fine, beds up to 3 inches.	4.5	24	61-65.5
Fossils collected by Winston from 61.5 feet, Saukiella planata Winston and Nicholls, Euptychaspis kirki Kobayashi, Saukiella serotina Longacre, Idiomesus levisensis (Rasetti), Briscoia llanoensis Winston and Nicholls, Saukia imperatrix Ulrich and Resser, Finkelnburgia sp., hypostomes, and free cheeks; from 61.5 to 62 feet, Bowmania americana (Walcott), Keithiella patula Winston and Nicholls, Bowmania sagitta Winston and Nicholls, Saukiella serotina Longacre, Briscoia llanoensis Winston and Nicholls, Idiomesus levisensis (Rasetti), Saukiella planata Winston and Nicholls, Plethometopus convergens (Raymond), pygidia, and free cheeks; from 65.5 feet, Euptychaspis kirki Kobayashi, Bayfieldia simata Winston and Nicholls, Eurekia eos (Hall), Bowmania sagitta Winston and Nicholls, Briscoia llanoensis Winston and Nicholls, and Saukiella planata Winston and Nicholls.			
6. Dolomite and limestone--dolomite fine-grained, yellowish-tan, calcareous, beds from less than 1 inch to 2 inches, occasional fossiliferous limestone lenses. Limestone in upper 18 inches, coarse-grained, white, sandy at top, weathers to semi-covered slope.	5.5	29.5	55.5-61
Fossils collected by Winston from 58.5 to 60 feet, Briscoia llanoensis Winston and Nicholls, Euptychaspis kirki Kobayashi, Bowmania sagitta Winston and Nicholls, Idiomesus levisensis (Rasetti), and undet. hypostomes.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
7. Sandstone--medium- to fine-grained, calcareous; lower foot yellowish-tan, thin-bedded; upper foot dark-tan, one bed. Fossils collected by Winston from 54 feet, Bowmania americana (Walcott), Saukiella serotina Longacre, Theodenisia brevis (Rasetti), Calvinella procera Winston and Nicholls, Idiomesus levisensis (Rasetti), Eurekia eos (Hall), Keithiella patula Winston and Nicholls, Euptychaspis kirki Kobayashi, Plethometopus convergens (Raymond), undet. brachiopod and hypostomes; from 55 feet, Euptychaspis kirki Kobayashi, Bowmania americana (Walcott), Prosaukia remora Longacre, Eurekia eos (Hall), Saukiella serotina Longacre, and Calvinella procera Winston and Nicholls.	2	31.5	53.5-55.5
8. Limestone--medium- to coarse-grained; white, fossil impressions dark-tan; sandy; beds 4 to 10 inches. Fossils collected by Winston from 52 feet, Euptychaspis kirki Kobayashi, Eurekia eos (Hall), Bayfieldia simata Winston and Nicholls, Bowmania americana (Walcott), Saukiella serotina Longacre, Calvinella procera Winston and Nicholls, Rasettia wichitaensis (Resser), Idiomesus? sp., and undet. brachiopod; from 52.6 feet, Eurekia eos (Hall), Bayfieldia simata Winston and Nicholls, Saukiella serotina Longacre, Calvinella procera Winston and Nicholls, and Plethometopus convergens (Raymond); from 53.5 feet, Eurekia eos (Hall).	3.7	35.2	49.8-53.5
9. Limestone--mostly coarse- to medium-grained, tannish-brown with tan fragments in white matrix, fossiliferous, beds 1 to 6 inches; from 47.5 to 48 feet, very fine-grained, medium-gray, thin-bedded.	2.8	38	47-49.8

	Description	Thickness in feet: Interval	Cumulative	Feet above base
10.	Sandstone--medium-grained; top foot white, rest mostly yellowish-brown, from 39 to 40 feet, grades laterally to white similar to that in interval below; friable.	15	53	32-47
SHIFT 240 feet east along strike; continue down in section.				
11.	Sandstone--fine-grained; white with scattered red grains giving white to reddish color; from 25 to 32 feet, weathers yellowish-brown, with irregular, white knobs up to 1 inch in diameter rising above yellowish-brown surface; grains subangular to round, well-sorted.	9.5	62.5	22.5-32
12.	Limestone--fine-grained; white with orange to red grains and irregular patches, weathers dark-red; sandy, increasingly sandy upward; bedding surfaces rough from pits and holes.	3	65.5	19.5-22.5
13.	Dolomite--very fine grained; in lower part tan, somewhat calcareous, beds 2 to 6 inches; in upper part reddish, calcareous; from 15 to 15.5 feet sandy, grains medium to fine.	6.5	72	13-19.5
14.	Limestone--medium-grained; medium- to light-gray, weathers dark-gray; top bed fossiliferous; beds 3 to 4 inches.	1.5	73.5	11.5-13

Fossils collected by Winston from 12.6 feet, Bayfieldia simata Winston and Nicholls, Bayfieldia simata var. A Winston and Nicholls, Euptychaspis typicalis Ulrich, Saukia imperatrix Ulrich and Resser, Stenopilus latus Ulrich, Finkelnburgia cf. F. finkelnburgi (Walcott), dikelocephalid fragments, and echioderm? plates?.

	Description	Thickness in feet: Interval	Cumulative	Feet above base
15.	Sandstone--very fine grained, light-tan, weathers tannish-gray; calcareous except top foot; grains, subrounded, well-sorted; beds 2 to 4 inches.	3.5	77	8-11.5
16.	Limestone--fine-grained; white with medium-grained tan dolomitic patches, weathers tan- to medium-gray; a few sand grains.	1	78	7-8
17.	Sandstone--medium-grained at base to fine-grained at top; yellow and red, weathers reddish-tan; massive.	2.5	80.5	4.5-7
18.	Sandstone--medium-grained; light-gray with yellowish-orange pinhead- to 0.5-inch patches, weathers yellow; beds 1 to 3 inches.	2	82.5	2.5-4.5
19.	Sandstone--medium-grained, intraformational conglomerate pebbles in fine-grained, sandy limestone matrix; very light gray.	2.5	85	0-2.5

Skunk Bend Segment

The 44.5 feet of rock measured in the Skunk Bend section belongs to the San Saba Member. The top of the section is at a fault on top of the west bank of Leon Creek 3,000 feet east of the Ed Eckert ranch headquarters. The base of the section is 200 feet east of its top and in the bed of Leon Creek at Skunk Bend, a prominent bend about 3,200 feet east of the Ed Eckert ranch headquarters. The section was measured and described by Alexander and Winston in August 1954.

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 44.5 feet described			
Wilberns Formation: 44.5 feet described			
San Saba Member: 44.5 feet described			
Calcitic facies: 44.5 feet described			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
1.	Sandstone--very fine grained; light-gray with buff bands, weathers light-gray, irregularly mottled brown; calcareous.	14.5	14.5	30-44.5
2.	Shale and limestone--shale buff, weathers tan to white, poorly exposed; limestone from 21 to 22 and 28 to 30 feet, tan, silty, weathers pitted.	10	24.5	20-30
3.	Sandstone and shale--sandstone fine-grained; buff, weathers brown, calcareous, very compact; beds 9 to 15 inches; interbedded with shale.	13.5	38	6.5-20
4.	Sandstone--fine-grained, buff, one bed.	1	39	5.5-6.5
5.	Shale--buff, some beds calcareous, some glauconitic.	1	40	4.5-5.5
6.	Sandstone--medium-grained; green, weathers olive-green to olive-tan; very glauconitic; calcareous; beds 9 to 12 inches.	4.5	44.5	0-4.5

Hext-Calf Creek Area, Menard and Mason Counties

Calf Creek Stratigraphic Section, Mason County

The Calf Creek section, about 0.75 mile long, on the Blockhouse ranch in northwestern Mason County, is situated along the lower reach of Calf Creek and downstream along the San Saba River. It includes 5 feet of the Threadgill Member of the Tanyard Formation, 149 feet of the upper sandy and calcitic part of the San Saba Member of the Wilberns Formation, and 3 feet of dolomitic San Saba.

The top of the section is about 2,100 feet northwest of the mouth of Calf Creek, about 200 feet northeast of the edge of a bluff along Calf Creek, and on the west slope of a short drain (Part 1, Pl. 7, fig. 6).

During the spring of 1950, Barnes described the section and mapped the area; Ellinwood collected fossils and chip sampled the section in 5-foot intervals. The fossil lists were updated by Bell during June and July 1968.

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Ellenburger Group: 5 feet described			
Tanyard Formation: 5 feet described			
Threadgill Member: 5 feet described			
Calcitic facies: 5 feet described			
1. Limestone--aphanitic- to fine-grained; slightly silty and argillaceous; intraformational conglomerate in lower part with aphanitic pebbles up to 0.5 of an inch in fine-grained matrix; from 152 to 155 feet, thin-bedded; from 155 to 157 feet, beds about 6 inches thick; a few dolomitized trails on upper surface.	5	5	152-157
Moore Hollow Group: 152 feet described			
Wilberns Formation: 152 feet described			
San Saba Member: 152 described			
Calcitic facies: 149 feet thick			
2. Limestone--coarse-grained at base, fine-grained upward; greenish-gray to brownish-gray and yellowish-gray; glauconitic	11	16	141-152

Description	Thickness in feet: Interval	Cumulative	Feet above base
except in upper few feet; somewhat sandy in upper 2 feet, sand medium, in this case influencing the placement of the boundary; much intraformational conglomerate; from 141 to 144 feet, beds 6 to 8 inches thick; from 144 to 148 feet, thin-bedded, poorly exposed; from 148 to 152 feet, beds 2 to 4 inches thick with very fine grained, brownish-yellow dolomite patches and dolomitized burrows and trails.			
Thin sectioned at 142, 142.5, and 150 feet. At 142 and 142.5 feet, limestone--trilobite debris, pellets, intraclasts, and a few dolomite rhombs mostly in fine- to coarse-grained, clear, secondary calcite added to pelmatozoan debris, some radial to fossils; small aphanitic intraclasts of uncertain derivation may be fossil fillings; one at 142.5 feet, 0.25-inch in size, contains trilobite and pelmatozoan debris, a microgranular intraclast with pellets, and some very fine silt; dolomite rhombs, 0.15 mm, scarce at 142 feet, some at 142.5 feet, about 0.25 mm, replaces matrix and fossil fillings, in part replaced by calcite, some limonite stain; stylolites common. At 150 feet, limestone--intraclasts, pellets, silt, trilobite debris, and a few phosphatic brachiopod fragments in a matrix of very fine to coarse grained, secondary calcite added to pelmatozoan debris; intraclasts mostly dolomite microgranular, a few very fine grained, a few limestone, aphanitic; dolomite also replaces matrix, invades fossil fragments, some limonite stained and partly replaced by calcite; silt mostly authigenic feldspar, some detrital centers, a few detrital grains; some glauconite, fragmental.			
Fossils collected by Ellinwood from 142 feet, *Hystricurus* cf. *H.* sp.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
D of Ross, Symphysurina brevispicata Hintze, linguloid, and gastropods.			
SHIFT along bedding south-southwestward about 140 feet; continue down in section on west slope of short drain.			
3. Limestone--fine- to coarse-grained; glauconitic part dark to light greenish-gray, rest yellowish- to brownish-gray, some brownish-yellow dolomite patches; mostly sandy and glauconitic, top foot the sandiest; sand medium to very coarse, fairly well-rounded, slightly rough; slightly silty and argillaceous. From 128 to 133 feet, thin-bedded to nodular, poorly exposed; from 133 to 141 feet, beds average 6 inches; dolomite patches common from 134 to 140 feet.	13	29	128-141
Thin sectioned at 132 feet. Limestone--sand, glauconite, dolomite, trilobite debris, a few finely radiate fossils, and a few pelmatozoan and phosphatic brachiopod fragments in a fine-grained, clear calcite mosaic; glauconite rounded to fragments, much admixed calcite, invades pelmatozoan debris and possibly finely radiate fossils, some ordered films, in part replaced by dolomite; a large aphanitic intraclast partly rimmed by dolomite and clear calcite, the dolomite where it reaches the periphery is abraded; dolomite, 0.15 to 0.25 mm, replaces matrix, fossil debris, and glauconite, only slightly weathered; sand fine to medium, angular to fairly well rounded, mostly quartz with straight extinction, metamorphic and composite grains scarce, feldspar scarce, a few grains of chert.			
Fossils collected by Ellinwood from 132 feet, Clelandia texana Winston and Nicholls, Hystricurus millardesis Hintze, Symphysurina brevispicata Hintze, and Apheoorthis ornata Ulrich and Cooper; from 136 feet, Jujuyaspis keideli Kobayashi,			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Symphysurina brevispicata Hintze, and Apheoorthis ornata Ulrich and Cooper.			
Fossils collected by Nicholls from 133.5 feet, Clelandia texana Winston and Nicholls, Hystricurus millardensis Hintze, Symphysurina brevispicata Hintze, and Owenella-like gastropod; from 134.5 feet, Clelandia texana Winston and Nicholls, Hystricurus millardensis Hintze, Jujuyaspis keideli Kobayashi, and Symphysurina brevispicata Hintze; from 135 feet, Clelandia texana Winston and Nicholls, Hystricurus millardensis Hintze, Jujuyaspis keideli Kobayashi, and Symphysurina brevispicata Hintze.			
SHIFT around the head of the drain to a point 100 feet distant on the opposite slope; continue down in section southwestward changing to southward as Calf Creek is approached.			
4. Limestone and dolomite--mostly limestone medium to very fine grained, a few coarse-grained beds; various greenish-grays to light yellowish-gray and brownish-gray; some beds glauconitic; mostly slightly silty and argillaceous; intraformational conglomerate abundant; thin- and medium-bedded intervals alternate. Dolomite very fine grained, brownish-yellow, forms a 6-inch bed at bottom of interval.	37	66	91-128
From 91.5 to 95 feet, medium-grained, intraformational conglomerate beds 12, 6, and 1 inches thick separated by covered intervals; from 95 to 102 feet, mostly 6-inch intraformational conglomerate beds separated by 2- to 6-inch argillaceous intervals, thin-bedded, nodular; from 102 to 106 feet, thin-bedded, nodular, argillaceous; from 106 to 113 feet, mostly intraformational conglomerate, beds 4 to 8 inches alternating with thin-bedded			

Description	Thickness in feet: Interval	Cumulative	Feet above base
nodular argillaceous intervals, a 4-inch oolite bed at 110 feet; from 113 to 115 feet, beds from 1 inch to less than an inch thick; from 115 to 116 feet, intraformational conglomerate; from 116 to 118 feet, thin-bedded; from 118 to 119.5 feet, intraformational conglomerate with brownish-yellow dolomite patches; from 119.5 to 123 feet, beds 3 inches and less, some beds mostly brownish-yellow dolomite; from 123 to 128 feet, beds mostly 2 to 6 inches, some very glauconitic, others composed of intraformational conglomerate.			
Thin sectioned at 112 and 125 feet. At 112 feet, limestone--in part unweathered; mostly trilobite and pelmatozoan debris, gastropod fillings, and intraclasts(?), dolomite, some glauconite, and a few finely radiate fossils in a fine-grained, clear calcite mosaic; intraclasts aphanitic, probably mostly gastropod fillings, many replaced by dolomite; glauconite mostly replaces, rarely coats fossil fillings or intraclasts, much of it associated with pyrite and interstitial to dolomite, a few grains lobate; dolomite, 0.1 to 0.2 mm, replaces fossil fillings and intraclasts, at one end of slide entirely fresh, at other end entirely replaced by calcite and admixed limonite, a gradational zone between with calcite replacement starting at centers of rhombs (this section furnished positive proof that dolomite is replaced by calcite during weathering). At 125 feet, limestone--in part composed of trilobite and pelmatozoan debris, intraclasts, numerous tiny gastropods, a fossil resembling spicule type B, dolomite and glauconite in a microgranular, clear calcite matrix; in part densely aphanitic in vague wavy			

Description	Thickness in feet: Interval	Cumulative	Feet above base
beds the tops of which are limonitic, the upper beds contain some pelmatozoan debris, some trilobite and gastropod debris mostly replaced by calcite mosaics, fragmental glauconite, and features that may be stylolites; the lower bed contains similar fossils in addition to finely radiate fossils, and burrows filled by slightly coarser calcite containing much silt, finely comminuted fossil debris, and many pellets; glauconite lobate to fragmental, either much admixed calcite or possibly invades intraclasts or fossil fillings since the grains are more calcitic at their centers, possibly some dolomite replacement; dolomite, 0.2 to 0.4 mm, replaces fossil fillings and intraclasts, which in turn are almost entirely replaced by calcite and admixed limonite, silt mostly authigenic feldspar, some detrital particles have microcline twinning.			
Fossils collected by Nicholls from 92 feet, Highgatella cf. H. gelasinata (Shaw), Missisquoia nasuta Winston and Nicholls, Apheoorthis ornata Ulrich and Cooper, linguloid, and echinoderm plates; from 93 feet, Highgatella cf. H. gelasinata (Shaw), Missisquoia inflata Winston and Nicholls, Missisquoia typicalis Shaw, and Missisquoia nasuta Winston and Nicholls; from 94 feet, pygidium undet., and conodonts; from 95.5 feet, tiny linguloid; from 99 feet, Symphysurina bubops Winston and Nicholls, Apheoorthis ornata Ulrich and Cooper, pygidium undet., linguloid, and conodonts; from 99.5 feet, Symphysurina bubops Winston and Nicholls and Conotreta sp.; from 113 feet, conodont? or tooth? from 120 feet, Homagnostus reductus Winston and Nicholls, Highgatella cordilleri (Lochman), Symphysurina bubops Winston and Nicholls, Apheoorthis ornata Ulrich and Cooper, micromitrid brachiopod, and conodonts; from 123 feet, undet. gastropods.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
SHIFT eastward about 2,300 feet along the top of sandstone to a point 200 feet north of San Saba River flood plain and 200 feet east of a short drain; continue down in section east-southeast toward point where drain reaches flood plain.			
5. Sandstone--fine- to medium-grained, a few coarse grains in upper half; brownish-yellow to orange-yellow; very calcareous; grains fairly well rounded, slightly rough; beds from 72 to 77 feet, average about 1 foot, rest of interval mostly poorly exposed.	21	87	70-91
Thin sectioned at 85 feet. Sandstone--cement mostly dolomite replaced by calcite and much admixed limonite, some clear calcite fills pores, calcite in part poikilitic, one crystal may encompass several 0.1 to 0.3-mm ghosts of dolomite rhombs; sand fine to medium, mostly subrounded to angular, a few grains well-rounded, mostly quartz with straight extinction, a few grains composite, some from a metamorphic source, some microcline shows distinct overgrowths.			
Fossils collected by Nicholls from 70 feet, Schizopea coquina; from 90 feet, Missisquoia typicalis Shaw, Missisquoia nasuta Winston and Nicholls, and Apheoorthis ornata Ulrich and Cooper; from 90.5 feet, linguloid fragments and conodonts.			
6. Limestone--coarse-grained; greenish-gray in lower part grading upward to light yellowish-gray and light brownish-gray; glauconitic in lower part; slightly silty; in part sandy, very sandy bed from 62 to 63 feet, grains medium to coarse, intraformational conglomerate at 63 feet.	11	98	59-70

Description	Thickness in feet: Interval	Cumulative	Feet above base
Thin sectioned at 67 feet. Limestone--numerous gastropods, much trilobite and pelmatozoan debris, and dolomite in aphanitic to microgranular calcite matrix in part pelleted; gastropod fillings densely aphanitic, feebly translucent, speckled by limonite pseudomorphous after pyrite, in part replaced by dolomite; dolomite, 0.1 to 0.4 mm, replaces pelmatozoan debris some of which appears to have been abraded to spheres, one rhomb may completely replace one sphere and some surrounding matrix, also replaces some trilobite debris, matrix, and cavity fillings other than the gastropod; stylolites common, in part with limonite and authigenic feldspar silt along them.			
Fossils collected by Nicholls from 61 feet, *Acheilops masonensis* Winston and Nicholls, *Bayfieldia simata* Winston and Nicholls, *Bowmania pennsylvanica* Rasetti, *Briscoia llanoensis* Winston and Nicholls, *Calvinella prethoparia* Longacre, *Euptychaspis kirki* Kobayashi, *Eurekia eos* (Hall), *Idiomensus levisensis* (Rasetti), *Leiocoryphe* cf. *L. longiceps* Rasetti, *Plethometopus convergens* (Raymond), *Saukia imperatrix* Ulrich and Resser, *Saukiella planata* Winston and Nicholls, *Saukiella serotina* Longacre, *Stenopilus latus* Ulrich, *Finkelnburgia* cf. *F. oseola* (Walcott), and misc. pygidia; from 63± feet, *Bowmania americana* (Walcott), *Bowmania pennsylvanica* Rasetti, *Briscoia llanoensis* Winston and Nicholls, *Calvinella prethoparia* Longacre, *Euptychaspis kirki* Kobayashi, *Eurekia eos* (Hall), *Idiomesus levisensis* (Rasetti), *Saukiella serotina* Longacre, *Finkelnburgia* sp., and *Owenella* sp.; from 69.5 feet, *Acheilops masonensis* Winston and Nicholls, *Corbinia apopsis* Winston and Nicholls, and orthid brachiopod.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Ellinwood from 67 feet, Acheilops masonensis Winston and Nicholls, Apatokephaloides clivosus Raymond, Corbinia apopsis Winston and Nicholls, Idiomesus levisensis (Rasetti), Leiobienvillia leonensis (Winston and Nicholls), Triarthropsis cf. T. limbata Rasetti, Triarthropsis nitida Ulrich, Triarthropsis princetonensis Kobayashi, and orthid brachiopod.			
7. Sandstone and limestone--very calcareous sandstone to very sandy limestone; many shades of brownish-yellow and yellowish-orange; silty, glauconitic, and argillaceous; limestone fine and very coarse grained; sand very fine to medium, fairly well rounded, slightly rough; medium-bedded.	5	103	54-59
Fossils collected by Nicholls from 58 feet, Saukiella serotina Longacre, orthid brachiopod, and Owenella sp.			
Fossils collected by Ellinwood from 58.2 feet, Bayfieldia simata Winston and Nicholls, Bowmania pennsylvanica Rasetti, Briscoia llanoensis Winston and Nicholls, Euptychaspis jugalis Winston and Nicholls, Saukia imperatrix Ulrich and Resser, Saukiella serotina Longacre, and Stenopilus latus Ulrich.			
SHIFT eastward along the massive bed about 400 feet to a point about 150 feet north of San Saba River floodplain and about 100 feet west of the drain; continue down in section south-southeast toward point where the drain reaches floodplain.			
8. Sandstone and limestone--very calcareous sandstone to very sandy limestone; both medium to coarse grained; many shades of brownish-yellow and yellowish-orange;	11	114	43-54

Description	Thickness in feet: Interval	Cumulative	Feet above base
sand fairly well to well rounded; slightly rough, a few grains very coarse; beds up to 1 foot. Thin sectioned at 51 feet. Limestone--mostly 0.1 to 0.4 mm; dolomite replaced by calcite and much admixed limonite with only a few rhombic zones and thin plates of dolomite remaining, these have an index of refraction very near to that of pure magnesiodolomite; calcite also fills pores and vugs; originally dolomite, probably replaced an intraclastic and possibly fossiliferous limestone; sand fine to medium, a few grains very fine, angular to subrounded, mostly quartz with straight extinction, abundant; glauconite fragments and interstitial grains common; a few phosphatic brachiopods.			
9. Sandstone--medium to coarse, some very coarse grained; white in part stained yellow and brown; grains fairly well rounded, larger ones well-rounded, mostly rough; cementation varies laterally, about 500 feet to the east this interval is quartzite.	6	120	37-43
10. Limestone--medium-grained; brownish-yellow from weathering; sandy, sand fine to coarse, fairly well rounded, glauconitic in lower part; beds about 6 inches thick. Thin sectioned at 33 and 55 feet. At 33 feet, limestone--trilobite and pelmatozoan debris, intraclasts in part fossiliferous, a few ooids or possibly indistinct finely radiate fossils, and dolomite in a microgranular, clear calcite matrix, some radial to trilobites; silt common in intraclasts and along stylolites, mostly authigenic feldspar; intraclasts probably mostly fossil fillings; one sand grain; tiny glauconite	7	127	30-37

Description	Thickness in feet: Interval	Cumulative	Feet above base
fragments scarce; dolomite, 0.1 to 0.25 mm, shows no preference for replacement, replaced by calcite and admixed limonite. At 35 feet, sandstone--fine to medium, a few very fine grains; cement calcite fine- to coarse-grained, poikilitic, much 0.15 to 0.3-mm dolomite mostly replaced by calcite and admixed limonite; a few fragments of glauconite; sand angular to subrounded, mostly quartz with straight extinction, some microcline.			
SHIFT eastward about 500 feet to a point about 100 feet north of the road; continue down in section southward.			
11. Sandstone--very fine to medium grained; mostly weathered yellow and brown, white near middle with grains fairly well rounded; calcareous, bottom bed probably dolomitic; in part silty and argillaceous; grains mostly slightly rounded, rough; poorly exposed in line of section, some additional outcrops laterally; outcrop in road light to medium brownish-gray, argillaceous, thin-bedded.	27	154	3-30
Thin sectioned at 14 and 27 feet. At 14 feet, dolomite--fine-grained; zoned rhombs common; calcite fills voids; very sandy, some silt, sand medium to very fine, a few coarse grains, very well rounded to angular, mostly quartz, much feldspar in finer sizes, mostly authigenic; glauconite mostly weathered, interstitial, in part may have altered to reddish-orange interstitial limonite. At 27 feet, sandstone--very fine grained, a few fine grains, some silt; cement medium- to coarse-grained, poikilitic calcite; a few 0.1-mm dolomite rhombs replace matrix; sand and silt angular, mostly quartz, much microcline in part with authigenic feldspar, a few flakes of mica; tourmaline common.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Ellinwood from 27 feet, Bayfieldia simata Winston and Nicholls, Euptychaspis jugalis Winston and Nicholls, Saukiella junia (Walcott), var. B Winston and Nicholls, and Triarthropsis sp.			
Dolomitic facies: 3 feet described			
12. Dolomite--fine-grained, weathers yellowish-orange to brownish-orange, fresh rock beige, slightly sandy in upper part, beds 6 to 12 inches.	3	157	0 - 3
A dolomite specimen collected 15 feet below the bottom of the section is grayish-orange slightly mottled by medium light-gray. Another specimen 10 feet beneath is yellowish-orange somewhat mottled by dark yellowish-orange, and a few irregular areas are outlined by medium-gray.			
These specimens were thin-sectioned. At -15 feet, dolomite--mostly fine-grained in part with zoned rhombs, some very fine grained; very small intraclasts or pellets discernible; some interstitial glauconite; very small quartz grains, scarce; porosity common, in part filled by calcite (Pl. 10, fig. 1). At -10 feet, dolomite--mostly fine to very fine grained, larger rhombs dark-centered; numerous very fine-grained and microgranular intraclasts, mostly very irregular outline, one 0.25 inch in diameter has concentric structure; porosity common, in part filled by calcite; stylolites faint.			

Bottom of section is about 200 feet north of the San Saba River at a point 2,400 feet downstream from the mouth of Calf

Description	Thickness in feet Interval	Cumulative	Feet above base
Creek. The zero mark is on a rounded dolomite surface at the top of a stromatolitic bioherm. A few hundred feet farther downstream, excellent stromatolitic structure is preserved in the dolomite. The fine to very fine grained stromatolitic part is similar in grain size to the debris between stromatolites. However, the bedded dolomite 0.25 to 0.5 mile downstream between large stromatolitic bioherms is somewhat coarser but still fine grained, with burrows that weather in relief, beds 6 to 12 inches, and yellowish-gray to medium-gray, whereas the stromatolites are light brownish-gray to pinkish-gray and slightly more vuggy than the bedded dolomite. Some of the bedded dolomite may be calcitic and glauconitic(?). No chert was seen. About 40 feet of dolomite is beneath the zero mark of the section north of the San Saba River, and south of the river the San Saba Member is dolomite to the top of the Point Peak Member.			

Table 30. Heavy mineral frequency counts, Calf Creek section, Mason County, Texas (count made by T. R. Walker).

Member	Sample Interval (ft)	Zircon				Tourmaline				Garnet		
		Total	Clear	Zoned	Dusty	Total	Brown	Green	Blue	Total	Colorless	Pink
San Saba Member	5-10	46.3	32.7	2.3	11.3	5.3	2.3	2.7	0.3	2.7	2.3	0.3
	40-45	73.0	68.0	0.0	5.0	7.0	4.3	2.7	0.0	2.7	2.3	0.3
	85-90	25.0	22.7	0.3	2.0	3.3	1.7	1.6	0.0	4.7	2.3	2.3

Rutile			Other Minerals			
Total	Amber	Foxy red	Anatase	Altered ilmenite	Leucoxene	Black opaque
4.3	4.0	0.3	16.0	2.7	22.3	0.3
1.0	0.7	0.3	2.7	0.3	10.0	2.0
2.7	2.3	0.3	9.0	25.0	26.7	3.7

Table 31. Insoluble residue content, Calf Creek section, Mason County, Texas.

Feet above base	Insoluble residue in percent	Feet above base	Insoluble residue in percent
154-159	10.4	75-80	39.0
148-154	16.7	70-75	36.4
143-148	9.6	65-70	3.4
138-143	23.1	60-65	7.9
133-138	15.3	55-60	18.2
128-133	14.2	50-55	33.0
125-128	8.5	45-50	38.1
120-125	16.4	40-45	68.1
115-120	9.5	35-40	47.5
110-115	5.5	30-35	28.8
105-110	7.2	25-30	54.6
100-105	5.7	15-20	55.7
95-100	4.8	10-15	49.3
91-95	8.4	5-10	58.1
85-91	56.1	0-5	11.1
80-85	52.2	-5-0	2.3

Camp San Saba--Camp Air Area, McCulloch and Mason Counties

Camp San Saba Stratigraphic Section, McCulloch County

The top of the section is at the top of a hill about 1,500 feet N. 52° W. from the R. Appleton ranch house and 4,500 feet N. 62° W. from the U.S. Highway 87 bridge over the San Saba River. The bottom of the section is at the lowest exposed bed at the edge of a boulder-strewn alluvial plain on the left bank of the San Saba River, downstream about 1,000 feet from the rock-crossing ford one-half mile northeast of Camp San Saba (Part 1, Pl. 8, fig. 2).

The section was measured during the fall of 1949 by Barnes and Ellinwood. Ellinwood collected fossils and chip sampled the section in 5-foot intervals; the description is by Barnes. The fossil lists were updated by Bell during July and August 1968.

Thicknesses of units in the Camp San Saba section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Ellenburger Group (76 feet measured)		
Tanyard Formation (76 feet measured)		
Threadgill Member (76 feet measured)		
Calcitic facies	76+	516-592
Moore Hollow Group (516 feet measured)		
Wilberns Formation (516 feet measured)		
San Saba Member (299 feet described)		
Calcitic facies	299	217-516
Point Peak Member	94	123-217
Morgan Creek Limestone Member	114	9-123
Welge Sandstone Member	9+	0-9

Description of Section

Description	Thickness in feet: Interval	Thickness in feet: Cumulative	Feet above base
Ellenburger Group: 76 feet described			
Tanyard Formation: 76 feet described			
Threadgill Member: 76 feet described			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
1.	Limestone--aphanitic, yellowish-gray (5Y 7/1), some beds slightly dolomite mottled, dolomite grayish-orange, trails scarce, beds mostly 4 to 6 inches. Residue--silt, clay, and a few tiny grains of glauconite. Silt mostly feldspar with much authigenic overgrowth, some quartz. Quartzose chert scarce. Thin sectioned at 592 feet. Limestone--mostly aphanitic, in part microgranular and pelleted; much finely comminuted fossil debris, a few gastropods and larger trilobite and pelmatozoan fragments; many cubes and specks of limonite; silt very scarce, mostly authigenic feldspar; indistinct, 0.5-inch, rhythmic beds are indicated by gradation in amount of fossil debris; yellowish-orange, limonitic clay along stylolites; narrow calcite veins terminate at stylolites. Fossils are *Lytospira* and *Ophileta* throughout, *Finkelnburgia helleri* at 579 feet.	15	15	577 - 592
2.	Limestone--mostly aphanitic, some fine to very fine grained; yellowish-gray (5Y 7/1), some beds mottled by pale to dark-yellowish-orange dolomite; trails and other markings common. Residue--mostly clay, silt common, some very fine sand below 585 feet, glauconite extremely scarce above 560 feet; silt ranges from mostly quartz from 545 to 550 feet to mostly feldspar, detrital most abundant in a few samples, authigenic most abundant in the rest; sand similar to silt in composition. From 516 to 519 feet, mostly covered, probably nodular; 519 to 521 feet, thin-bedded; 521 to 522 feet, one bed slightly dolomite mottled; 522 to 524 feet, mostly covered; 524 to 525 feet, medium-	61	76	516 - 577

Description	Thickness in feet: Interval	Cumulative	Feet above base
bedded, small pebble intraformational conglomerate at top; 525 to 527 feet, prominent dolomite mottled bed; 527 to 529 feet, poorly exposed; 529 to 530 feet, medium-bedded, patches of intraformational conglomerate on top surface; 530 to 537 feet, poorly exposed, some dolomite mottling; 537 to 538 feet, one bed, limonite nodules pseudomorphous after pyrite on top surface; 538 to 550 feet, poorly exposed, appears to be thin-bedded, in part dolomite mottled, intraformational conglomerate float common; 550 to 554 feet, medium-bedded, much dolomite mottling; 554 to 555 feet, one bed; 555 to 558 feet, poorly exposed; 558 to 567 feet, beds mostly 6 to 12 inches, a few markings on bedding surfaces; 567 to 577 feet, poorly exposed, thin-bedded.			
Chert at 552 feet, quartzose, marble-size nodules; from 554 to 555 feet, quartzose, along trails(?).			
Thin sectioned at 517, 537, and 560 feet. At 517 feet, limestone--a few intraclasts, some trilobite and pelmatozoan debris, and a few finely radiate organisms in an aphanitic to microgranular matrix, in part pelleted; intraclasts aphanitic, scant fossil debris, a few replaced by dolomite; silt common, mostly authigenic feldspar; dolomite 0.05 to 0.15 mm, mostly as stringers and masses, mostly replaced by calcite and admixed limonite, much interstitial clay; stylolites numerous, much limonitic clay along them. At 537 feet, limestone--mostly aphanitic, in part microgranular to very fine grained, pelleted and intraclastic; some fossil debris; intraclasts aphanitic, specked by limonite; coarse-grained calcite fills voids, some caliche along a bedding opening; silt very scarce, mostly authigenic feldspar. At 560 feet, limestone--aphanitic;			

Description	Thickness in feet: Interval	Cumulative	Feet above base
trilobite fragments scarce, numerous rod-like fossils of calcite, a few in part silica appear to be spicules; silt fine, mostly authigenic feldspar; some slight brecciation with fractures filled by coarse, clear calcite. Fossils are Ophileta at 527 and 538 feet.			
Moore Hollow Group: 516 feet described Wilberns Formation: 516 feet described San Saba Member: 299 feet thick Calcitic facies: 299 feet thick			
The top of the Wilberns Formation was arbitrarily chosen by using lithologic characteristics; the limestone beneath the boundary is mostly granular, that above mostly aphanitic. The choice of the boundary was also influenced by the distribution of glauconite.			
3. Limestone--mostly very fine, some fine- and medium-grained; mostly somber hues of pale-yellowish-brown, greenish cast where glauconitic; limonite common; dolomite pale- to dark-yellowish-orange common as mottles and patches; beds mostly 6 to 12 inches. Residue--clay, silt, sand, and glauconite; silt contains various amounts of quartz and feldspar both authigenic and detrital; sand scarce, mostly very fine, a few grains fine from 495 to 500 feet; glauconite scarce to very abundant. From 490 to 496 feet, glauconitic, fossiliferous; 496 to 497 feet, fine-grained, mottled by dolomite; 497 to 503 feet, fine to very fine grained, the latter thin-bedded; 503 to 505 feet, covered; 505 to 507 feet, very fine grained, nodular, thin-bedded; 507 to 508 feet, very fine grained; 508 to 509 feet, fine-grained, mottled by dolomite; 509 to 510 feet, covered; 510 to 511 feet, fine-grained, mottled by dolomite; 511 to	26	102	490 - 516

Description	Thickness in feet: Interval	Cumulative	Feet above base
514 feet, mostly covered; 514 to 516 feet, lower part very fine grained, middle part fine-grained, mottled by dolomite, upper part fine to very fine grained, glauconitic.			
Thin sectioned at 508 and 511 feet. At 508 feet, limestone--numerous intraclasts and pellets, some silt, a few trilobite and pelmatozoan fragments and finely radiate organisms in an aphanitic to microgranular matrix; intraclasts aphanitic, in part may be cavity fillings of fossils; swirled areas of denser aphanitic limestone with centers of calcite may be filled burrows; silt mostly authigenic feldspar, a few detrital centers; tiny glauconite grains scarce; stylolites have limonitic clay along them. At 511 feet, limestone--irregularly distributed trilobite and pelmatozoan debris and patches of dolomite in aphanitic to microgranular matrix, in part pelleted, in part structureless; silt common, mostly authigenic feldspar; dolomite, 0.05 to 0.15 mm, strongly zoned, replaces matrix, cavity fillings in fossils, and intraclasts(?), yellowish-orange from weathering, in part replaced by calcite; stylolites have limonitic clay along them and probably formed after dolomitization, as indicated by truncated rhombs.			
Fossils collected by Ellinwood from 490.5 feet, Apheoorthis ornata Ulrich and Cooper, Symphysurina brevispicata Hintze, and Jujuyaspis keideli Kobayashi; from 491 feet, Symphysurina brevispicata Hintze, and Jujuyaspis keideli Kobayashi; from 491.5 feet, Symphysurina brevispicata Hintz, and Jujuyaspis keideli Kobayashi; from 509, 512, and 515 feet, Symphysurina brevispicata Hintze.			
Fossils collected by Nicholls and Ellinwood from 496 feet, Jujuyaspis			

Description	Thickness in feet: Interval	Cumulative	Feet above base
keideli Kobayashi, *Symphysurina brevispicata* Hintze, and *Hystricurus millardensis* Hintz.			
Fossils collected by Nicholls from 515 feet, *Symphysurina brevispicata* Hintz, and *Homagnostus reductus* Winston and Nicholls; from 516 feet, conodonts.			
4. Limestone--alternating intervals of very fine grained to aphanitic, thin-bedded, yellowish-gray and fine-grained beds, mostly intraformational conglomerate; dolomite mottles and patches common; silty, silt mostly feldspar both detrital and authigenic; some very fine sand, and a few fine grains, in upper 5 feet.	20	122	470 - 490
From 470 to 471.5 feet, very fine grained, a 3-inch intraformational conglomerate at 470 feet; 471.5 to 472.5 feet, fine-grained, some grayish-orange dolomite patches; 472.5 to 476.5 feet, poorly exposed, mostly very fine grained; 476.5 to 477.5 feet, intraformational conglomerate, two beds; 477.5 to 480 feet, not exposed, probably very fine grained; 480 to 480.5 feet, intraformational conglomerate, one bed; 480.5 to 481.5 feet, poorly exposed, very fine grained; 481.5 to 482.5 feet, fine-grained, one bed; from 482.5 to 490 feet, poorly exposed, some beds pelleted, some intraformational conglomerate; at 485 feet, coarse-grained; at 486 feet glauconite in a 3-inch bed is in part replaced by dolomite; from about 487 to 488 feet, fine-grained, mottled by abundant dark yellowish-orange dolomite.			
Thin sectioned at 475, 485, and 486 (two sections) feet. At 475 feet, limestone--intraclasts and a few trilobite fragments mostly in a microgranular to very fine-grained, pelleted matrix, some fine- to coarse-grained matrix of secondarily enlarged pelmatozoan			

Description	Thickness in feet: Interval	Cumulative	Feet above base
debris; intraclasts in part very densely aphanitic, much finely comminuted fossil debris, some silt, in part pelleted; silt mostly feldspar, in part authigenic; dolomite, 0.15 mm, a few small masses in matrix, replaced by limonitic calcite; limonite specks fairly abundant; stylolites have limonitic clay along them. At 485 feet, limestone--gastropod steinkerns, some trilobite and secondarily enlarged pelmatozoan debris in a microgranular, in part pelleted matrix; medium-grained, clear calcite fills a void; gastropod steinkerns very densely aphanitic, some fossil debris, in part pelleted; gastropod shell material where present replaced by mosaic calcite, which in turn was partly replaced by dolomite now altered to calcite and limonite; dolomite, 0.05 to 0.1 mm, a few rhombs in matrix; glauconite scarce, tiny fragments. At 486 feet, limestone--aphanitic gastropod steinkerns and intraclasts(?), trilobite and secondarily enlarged pelmatozoan debris, glauconite and dolomite in aphanitic to very fine grained matrix; steinkerns and intraclasts contain fossil debris and silt, a few large intraclasts sharply bounded on one side merge with the matrix on the other; glauconite altered, mostly admixed with carbonate and limonitic clay(?); dolomite, 0.05 to 0.15 mm, replaces many steinkerns and small intraclasts(?), and some fossil debris, in turn mostly replaced by limonitic calcite; gastropod shell material replaced by calcite mosaic; silt mostly authigenic feldspar; stylolites weakly developed.			
Fossils collected by Nicholls from 482.5 feet, Symphysurina brevispicata Hintze; from 485 feet, Highgatella cordilleri (Lochman), Jujuyaspis keideli Kobayashi, Symphysurina brevispicata Hintze, Syntrophina carinifera Ulrich and Cooper, and gastropod coquinite.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Ellinwood from 485 feet, gastropod coquinite.			
SHIFT about 50 feet eastward; continue down in section.			
5. Limestone--very fine grained, between yellowish-gray and light olive-gray, mottled by grayish-yellow dolomite, shaly-bedded alternating with thicker bedded, mostly fine- to medium-grained; slightly silty, mostly feldspar both detrital and authigenic; ripple marks and intraformational conglomerate common.	33	155	437 - 470
From 437 to 437.5 feet, small fragment intraformational conglomerate; 437.5 to 438 feet, fine grained; 438 to 439 feet, very fine grained; 439 to 439.5 feet, coarse grained, glauconitic; 439.5 to 440 feet, very fine grained; 440 to 440.5 feet, fine grained, dark yellowish-orange patches of dolomite on bedding surfaces; 440.5 to 441.5 feet, medium grained, slightly glauconitic, large ripple marks on top surface; 441.5 to 442 feet, very fine grained, recessive, argillaceous; 442 to 445 feet, fine to medium grained, dark yellowish-orange dolomite patches in bottom bed, next bed intraformational breccia, top bed mostly a small-pebble intraformational conglomerate; at 443 feet, a small, medium-spired gastropod coquinite is replaced by dolomite; 445 to 451.5 feet, very fine grained to aphanitic; 451.5 to 452 feet, very fine grained, one bed; 452 to 461 feet, very fine grained to aphanitic; 461 to 461.5 feet, intraformational conglomerate, one bed; 461.5 to 464 feet, very fine grained, 2-inch intraformational conglomerate at 462.5 feet; 464 to 466.5 feet, mostly intraformational conglomerate; 466.5 to 467 feet, fine grained, one bed; 467 to 470 feet, mostly fine grained, much mottled by dark yellowish-orange dolomite.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Chert from 437 to 440 and 455 to 465 feet white, mostly granulated, possibly recent since some of it appears to be hyaline opal.			
Thin sectioned at 437.5, 443 (two sections), and 459 feet. At 437.5 feet, limestone--intraclasts and a few trilobite fragments mostly in microgranular to very fine grained matrix, in part in fine- to coarse-grained matrix of secondarily enlarged pelmatozoan debris; intraclasts mostly aphanitic to microgranular, pelleted, some fossil debris; a few rhombic to square holes surrounded by yellowish-orange stain that indicates the removal of dolomite; stylolites fairly common, indistinct. At 443 feet, limestone--numerous gastropod steinkerns and much trilobite and pelmatozoan debris in aphanitic to microgranular matrix; gastropod steinkerns very densely aphanitic, probably argillaceous, limonitic material along peripheries in part with greenish case probably formed from glauconite; gastropod shell material where present replaced by mosaic of tiny calcite crystals; one clear calcite vein; limonitic clay along a stylolite. At 459 feet, limestone--aphanitic intraclasts, finely radiate organisms and a few trilobite fragments mostly in fine-grained, clear calcite matrix, some aphanitic matrix; a few large intraclasts enveloped by a very thin, dense peripheral film followed inward by a very thin, slightly coarser, translucent film; small limonite masses probably formed from pyrite; dolomite scarce, replaces intraclasts, mostly replaced by limonitic calcite; limonitic clay along stylolites.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Nicholls from 442 feet, Missisquoia typicalis Shaw.			
6. Limestone--mostly fine and medium grained, some very fine and coarse grained; mostly pale yellowish-brown and yellowish-gray mottled by minute specks of grayish-orange and dark yellowish-orange dolomite; dark yellowish-orange dolomite patches on several bedding surfaces; silty, mostly feldspar both detrital and authigenic, quartz scarce; beds mostly 6 to 12 inches.	7	162	430 - 437
Thin sectioned at 435 feet. Limestone--intraclasts, gastropod steinkerns, and trilobites and calcareous brachiopod debris in part in an aphanitic, pelleted matrix, in part in a fine- to coarse-grained matrix of secondarily enlarged pelmatozoan debris; many intraclasts and steinkerns, contain some finely comminuted fossil debris, some in part, others wholly replaced by dolomite, a few coated by glauconite; dolomite, 0.05 to 0.2 mm, mostly indiscriminately distributed, in part replaced by limonitic calcite; silt scarce; glauconite in part appears to be replaced by dolomite.			
Fossils collected by Nicholls from 430 feet, Symphysurina brevispicata Hintze; from 432 feet, Highgatella cordilleri (Lochman), Missisquoia nasuta Winston and Nicholls, and Apheoorthis ornata Ulrich and Cooper; from 433 feet, Highgatella cordilleri (Lochman), Missisquoia nasuta Winston and Nicholls, and Apheoorthis ornata Ulrich and Cooper.			

SHIFT down Flat Branch about 400 feet; continue down in section.

	Description	Thickness in feet: Interval	Cumulative	Feet above base
7.	Limestone--fine, very fine, and medium grained and aphanitic; mostly pale-yellowish-brown, minor splotches of dark-yellowish-orange and moderate-yellowish-brown in a few beds; in part nodular from irregular shale films; a few beds pelleted; glauconite absent; from 427 to 427.5 feet, intraformational conglomerate, pebble-like objects in a few other beds; slightly silty, silt mostly feldspar both detrital and authigenic, some quartz; from 416 to 420 feet in line of section, a resistant ledge, laterally thin-bedded. Thin sectioned at 428 feet. Limestone--intraclasts and abundant trilobite and calcareous brachiopod debris in a very fine to fine-grained matrix of secondarily enlarged pelmatozoan debris; intraclasts mostly very finely comminuted fossil debris in a minimum of aphanitic matrix, in part pelleted, one contains limonite cubes, a few silty; silt mostly authigenic feldspar; dolomite common in matrix, fairly fresh, where replacing intraclasts altered to limonitic calcite. Fossils collected by Nicholls from 416 feet, Corbinia apopsis Winston and Nicholls; from 417 feet, Missisquoia typicalis Shaw, Schizopea? sp.; from 420 feet, Missisquoia typicalis Shaw; from 424 feet, Schizopea? sp.; from 425 feet, Missisquoia nasuta Winston and Nicholls, Missisquoia typicalis Shaw, and gastropod; from 427 feet, Symphysurina brevispicata Hintze and Missisquoia typicalis Shaw; from 428 feet, Symphysurina brevispicata Hintze; from 429 feet, Highgatella cordilleri (Lochman), Missisquoia typicalis Shaw, Symphysurina brevispicata Hintze, and high-spired gastropod.	14	176	416 - 430

Description	Thickness in feet: Interval	Cumulative	Feet above base
8. Limestone--mostly very fine grained to aphanitic, some medium grained; pale yellowish-brown; slightly silty, silt mostly feldspar both detrital and authigenic, quartz scarce; a few grains of very fine sand; beds irregular, mostly 1 to 2 inched.	3	179	413 - 416
Thin sectioned at 413 and 414 feet. At 413 feet, limestone--gastropod and hyolitid steinkerns, intraclasts, and a few trilobite and secondarily enlarged pelmatozoan fragments in aphanitic to very fine grained, clear calcite matrix; fossil fillings and intraclasts mostly replaced by dolomite, some in matrix, rhombs 0.05 to 0.1 mm, mostly altered to densely limonitic calcite; one faint stylolite. At 414 feet, limestone--aphanitic, almost structureless; clear mosaic calcite patches may fill voids; very slightly dolomitic and silty; silt mostly authigenic feldspar, a few tiny detrital centers; dolomite mostly microgranular, a mass at one end of slide 0.05 to 0.15 mm, about half replaced by calcite strating at center of rhombs; tiny grains of glauconite very scarce.			
Fossils collected by Ellinwood from 413 feet, Corbinia apopsis Winston and Nicholls, and orthid brachiopods.			
SHIFT about 1 mile eastward to Hudson Creek, using hyolithid bed to make shift and overlying thin-bedded, aphanitic to very fine grained, light gray weathering limestone as a check.			
9. Limestone--mostly coarse grained, some medium grained, a little fine grained; mostly yellowish-gray to darker, mottled by pale yellowish-orange and grayish-orange dolomite that appears to be replacing fossil fragments and other objects; glauconite and ooids	22	201	391 - 413

Description	Thickness in feet: Interval	Cumulative	Feet above base
common; slightly argillaceous; very slightly silty, silt both quartz and feldspar; some very fine sand in bottom sample; "mud balls"(?) in some beds.			
Thin sectioned at 400 feet. Limestone--much trilobite debris with some radial calcite and a few intraclasts mostly in a medium- to coarse- grained matrix of secondarily enlarged pelmatozoan debris, a little microgranular matrix; intraclasts aphanitic, silty, much finely comminuted fossil debris, mostly replaced by dolomite; silt mostly authigenic feldspar; dolomite mostly 0.05 to 0.1 mm, replaces intraclasts, fillings in fossils, rarely fossils, some 0.3-mm rhombs scattered in matrix, some limonitic staining.			
Fossils collected by Ellinwood from 395 feet, Owenella sp.; from 398 feet, Bayfieldia simata Winston and Nicholls, Euptychaspis kirki Kobayashi, Eurekia eos (Hall), and Owenella sp.; from 409 feet, Briscoia llanoensis Winston and Nicholls, Euptychaspis kirki Kobayashi, Eurekia eos (Hall), and Keithiella patula Winston and Nicholls.			
Fossils collected by Nicholls from 411 feet, Acheilops masonensis Winston and Nicholls, Apatokephaloides clivosus Raymond, Corbinia apopsis Winston and Nicholls, Idiomesus levisensis (Rasetti), Leiobienvillia leonensis Winston and Nicholls, Plethometopus obtusus Rasetti, Westonaspis? texana Longacre, and orthid? brachiopod.			
10. Limestone and shale--limestone coarse-grained, light-olive-gray mottled grayish-orange, oolitic, "mud balls"(?) common, glauconitic, very slightly silty, dolomite in minute mottles appears to replace fossil debris and	14	215	377 - 391

Description	Thickness in feet: Interval	Cumulative	Feet above base
other objects, beds 1 to 6 inches; shale silty, grayish-yellow, thin glauconitic streaks and fine-grained limestone beds common.			
From 377 to 383 feet, mostly limestone; 383 to 384.5 feet, mostly shale; 384.5 to 385.5 feet, mostly limestone; 385.5 to 386 feet, mostly shale; 386 to 391 feet, limestone with shale partings.			
Thin sectioned at 383 feet. Limestone--much trilobite and calcareous brachiopod debris and some dolomite in a medium- to coarse- grained matrix of secondarily enlarged pelmatozoan debris, a little aphanitic, pelleted matrix at one end of slide; fossil fillings densely aphanitic; silt scarce, mostly authigenic feldspar; dolomite, 0.05 to 0.15 mm, mostly replaces matrix, some fossil replacement, some along stylolites, mostly fresh, some limonitic staining; limonitic clay along stylolites.			
Fossils collected by Ellinwood from 381 feet, Bayfieldia simata Winston and Nicholls, Idiomesus levisensis (Rasetti), orthid brachiopod, and Owenella sp.; from 383 feet, Bayfieldia simata Winston and Nicholls, Calvinella procera Winston and Nicholls, dikelocephalid fragments, Finkelnburgia sp., Owenella sp., and high-spired gastropods; from 385 feet, pelmatozoan columnals.			
11. Limestone--coarse- to medium- grained; dolomite replacement occurs as minute mottles; mostly glauconitic, some beds very glauconitic, pebbles very glauconitic in intraformational conglomerate at 371 feet; "mud balls" (?) and ooids common; slightly silty; beds mostly 6 to 12 inches; covered from 365 to 368 feet in line of section	24	239	353-377

Description	Thickness in feet: Interval	Cumulative	Feet above base
except for one 6-inch bed near middle; interval exposed along face of bluff 125 feet to north.			
Thin sectioned at 360 and 376 feet. At 360 feet, limestone--much trilobite debris with a little radial calcite, some dolomite, a few grains of glauconite, and a few pellets in a medium- to coarse-grained matrix of secondarily enlarged pelmatozoan debris; silt very scarce, mostly authigenic feldspar; glauconite scarce, fragmental to rounded; dolomite, 0.1 to 0.2 mm, replaces fossils, cavity fillings, matrix, sutured along stylolites, some limonitic stain; one stylolite with silt, glauconite, yellowish-orange clay, and dolomite along it. At 376 feet, limestone--much glauconite and trilobite debris with a narrow rim of radial calcite around some fragments and some pellets and dolomite mostly in a fine- to coarse-grained matrix of secondarily enlarged pelmatozoan debris, a little pelleted aphanitic matrix at one end of slide; glauconite grains small, mostly fragmental; silt scarce, mostly authigenic feldspar; a few 0.05-mm, clear-brown, isotropic objects; a few tiny specks of limonite; dolomite, 0.1 to 0.2 mm, mostly replaces matrix, in part replaces fossil debris, slightly limonite stained; stylolites scarce.			
Fossils collected by Ellinwood from 356 feet, Bayfieldia binodosa (Hall), Bayfieldia simata var. A Winston and Nicholls, Euptychaspis typicalis Ulrich, Saukia tumida Ulrich and Resser, Saukiella junia (Walcott), var. B Winston and Nicholls, Stenopilus latus Ulrich, and Owenella sp.; from 360.5 feet, Bayfieldia simata Winston and Nicholls, Saukia tumida Ulrich and Resser, Stenopilus latus Ulrich, Finkelnburgia sp., and Owenella sp.; from 370 feet, Saukiella junia (Walcott), var. B Winston and Nicholls, and Stenopilus latus Ulrich; from 372.5 feet, Briscoia hartti (Walcott) and Euptychaspis typicalis Ulrich; from 375 feet,			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Bayfieldia simata Winston and Nicholls, Calvinella tenuisculpta Walcott, Eurekia eos (Hall), Idiomesus levisensis (Rasetti), and orthid brachiopod.			
12. Limestone--aphanitic to very fine grained, yellowish-gray, massive, slightly rough weathering, residue scarce mostly silt.	15	254	338-353
From 338 to 341 and 342 to 348 feet, pelleted; 341 to 342 feet, non-pelleted; 348 to 350.5 feet, nodular, mottled, greenish shaly material in lower part, dolomite moderate-yellowish-brown appears to follow burrows in upper part; from 350.5 to 353 feet, aphanitic, mottled by light-brown dolomite, one bed.			
Thin sectioned at 343 and 347 feet. At 343 feet, limestone--abundant aphanitic intraclasts, a few pellets, and a few finely radiate fossils in a microgranular to very fine-grained, clear calcite matrix; a few irregular patches of coarse-grained calcite probably fill voids. At 347 feet, limestone--intraclasts and a few finely radiate fossils in a microgranular- to fine-grained, clear calcite matrix; some medium-grained, clear calcite may fill voids; intraclasts, 0.05 to 5 mm, all have sharp borders, larger ones intraclastic to pelleted; a few very narrow calcite veins; stylolites indistinct, scarce.			
CROSS Hudson Creek at 341 feet in section. A sharp change in lithologic character at the top of this interval about coincides with the top of a stromatolitic reef 100 yards to east.			
13. Covered	2	256	336-338
14. Dolomite--fine-grained; in part mottled grayish-orange, in part very-pale-orange, in part a color between pale- and dark-yellowish-orange; calcitic; weathers smooth to rough; residue very scarce,	6	262	330-336

Description	Thickness in feet: Interval	Cumulative	Feet above base
mostly silt; beds indistinct, probably about 6 to 12 inches.			
Thin sectioned at 334 feet. Limestone--much dolomite and a few trilobite fragments mostly in an aphanitic, pelleted matrix, some microgranular matrix; silt very scarce, mostly authigenic feldspar; dolomite, 0.05 to 0.1 mm, patchy to scattered rhombs, destroys pelleted structure, a few rhombs partly replaced by calcite; a few stylolites.			
SHIFT downstream about 500 feet; continue down in section along east bank of Hudson Creek.			
15. Limestone--microgranular- to fine-grained and coarser, some beds very glauconitic, others nonglauconitic; from 305 to 310 feet, some very fine sand, mostly detrital feldspar with authigenic overgrowths, some quartz; slightly silty, similar in composition to sand; beds mostly 1 to 12 inches.	30	292	300-330
From 300 to 302 feet, very fine grained, thin-bedded, nodular, shale films about nodules; 302 to 306 feet, very fine grained, yellowish-gray mottled by pale-yellowish-orange dolomite, massive, rough weathering; 306 to 308 feet, medium-grained, oolitic in upper part, coarse glauconite common, mottled by minute specks of pale-yellowish-orange dolomite, bedding indistinct, weathers smooth; 308 to 310 feet, very fine grained, yellowish-gray, nodular, shale films about nodules, thin-bedded, recessive; 310 to 313 feet, same as above except more massive, rough weathering; 313 to 314 feet, medium-grained, mottled by minute specks of very pale yellowish-orange dolomite that appears to be replacing fossil fragments, smooth weathering; 314 to 323 feet, very fine grained, nodular, mottled by pale-yellowish-orange dolomite, massive in bluff, thin-bedded away from bluff; 323 to 324 feet, medium-grained, slightly glauconitic, dolomitic, smooth weathering; 324 to 330 feet, very fine grained, mottled by			

Description	Thickness in feet: Interval	Cumulative	Feet above base
pale-yellowish-orange dolomite, rough weathering.			
Thin sectioned at 302, 308, 308.5, and 311 feet. At 302 feet, limestone--ooids, some trilobite and secondarily enlarged pelmatozoan debris, and a few intraclasts similar to those at 308 feet in radial, clear calcite matrix; authigenic feldspar silt and fragmental glauconite very scarce; ooids finely radiate, very little concentric structure, a few contain fossil fragments, others glauconite, some sharp, many hazy, many replaced or partly replaced by dolomite, some rhombs truncated at peripheries of ooids, others project beyond borders (Pl. 16, fig. 3); dolomite, 0.1 to 0.2 mm, in part replaces fossils, in part replaced by calcite. At 308 feet, limestone--ooids with much radial calcite, intraclasts(?), minor trilobite and pelmatozoan debris, and a few pellets(?) in a microgranular, clear calcite matrix; intraclasts(?) may be fossils that originally had finely radiate structure; this is suggested by their shape and an overgrowth of finely radiate calcite; ooids, 0.1 to 0.75 mm, mostly finely radiate, some concentric structure, a few distinct, most with hazy borders, a few with fossil fragments at center, in part replaced by 0.1-mm dolomite, which rarely projects beyond boundaries; dolomite scarce between ooids, mostly fresh; limonite specks scarce; a vein of clear calcite fills a crack cutting a few ooids and following peripheries of others; portions of ooids and dolomite rhombs missing along stylolites. At 308.5 feet, limestone--intraclasts, finely radiate fossils, and a few trilobite and secondarily enlarged pelmatozoan fragments in a very fine-grained to microgranular, clear calcite matrix; glauconite very scarce, fragmental; intraclasts in part aphanitic, a few contain fossil debris, a			

Description	Thickness in feet: Interval	Cumulative	Feet above base
few slightly silty, mostly very small, a few very large, many in part or entirely replaced by dolomite; dolomite, 0.05 to 0.1 mm, very fresh; one large pelmatozoan fragment replaced centrally by chert. At 311 feet, limestone--about half dolomite, some trilobite and secondarily enlarged pelmatozoan debris, a few finely radiate fossils, phosphatic brachiopod fragments, and glauconite grains in an aphanitic, indistinctly pelleted matrix; silt very scarce, mostly authigenic feldspar; glauconite fragmental; dolomite, 0.05 to 0.1 mm, replaces matrix, in part replaced by calcite starting at centers of rhombs, some limonitic stain.			
Fossils collected by Ellinwood from 302.5 feet, Briscoia sp. or Dikelocephalus sp., Elkia(?) sp., Euptychaspis frontalis Longacre, Idiomesus levisensis (Rasetti), Keithiella scrupulosa Ellinwood, Leiocorphye occipitalis Rasetti, Monocheilus truncatus Ellinwood, Plethometopus convergens (Raymond), Saukiella fallax (Walcott), Triarthropsis sp., and saukid pygidia; from 307.5 feet, Bowmania sp., Briscoia sp. or Dikelocephalus sp., Euptychaspis frontalis Longacre, Idiomesus levisensis (Rasetti), Keithiella scrupulosa Ellinwood, Leiocoryphe occipitalis Rasetti, Monocheilus truncatus Ellinwood, Plethometopus convergens (Raymond), Saukiella fallax (Walcott), Triarthropsis sp., and Owenella sp.			
16. Covered in line of section. Laterally appears to be interreef limestone.	5	297	295-300

The stromatolitic biohermal part of the San Saba Member was crossed, using an average of the dips from below and above the reef. The thickness of the reef, therefore, may be in error. The top of the reef is very irregular, fluctuating through at least 80 feet of section within one-half mile of the line of section.

	Description	Thickness in feet: Interval	Cumulative	Feet above base
17.	Limestone and dolomite--reef and interreef beds; very slightly silty, silt mostly feldspar, both detrital and authigenic, some quartz. From 247 to 251 feet, interreef dolomite, dark-yellowish-orange; 251 to 259 feet, reef, individual stromatolites about 1 foot across, yellowish-gray, concentric structure brought out by incipient dolomitization, dolomite pale-yellowish-orange; 259 to 270 feet, interreef dolomite, light-brown to grayish-orange; 270 to 276 feet, reef, foot-sized stromatolites about one-third dolomite with excellently displayed concentric structure; 276 to 277 feet; interreef dolomite, light-brown to dark-yellowish-orange; 277 to 280 feet, dolomite-mottled reef and interreef beds on a dip slope; 280 to 285 feet, interreef dolomite, pale-red to light-brown; 285 to 295 feet; dolomitic reef, some interreef dolomite at about 290 feet. Thin sectioned at 250, 261, 278, 290, and 292 feet. At 250 feet, limestone--dolomite replacement of limestone entirely replaced by limonite-stained calcite, large areas have synchronous extinction; dolomite ghosts average about 0.1 mm; some interstitial limonite; weathered glauconite scarce. At 261 feet, limestone--dolomite and a little trilobite debris in an aphanitic matrix; a few irregular, fine-grained, clear calcite masses probably fill voids; dolomite mostly 0.05 to 0.1 mm, replaces matrix, almost entirely replaced by limonite-stained calcite; some caliche along bedding openings. At 278 feet, limestone--numerous intraclasts (Pl. 16, fig. 2) and a few trilobite, pelmatozoan, and calcareous brachiopod fragments in a fine-grained, clear calcite mosaic, calcite radial to fossil fragments scarce; intraclasts mostly aphanitic, many very thin, long, somewhat irregular, a few very small, others of pebble size, a few partly to entirely replaced by dolomite; dolomite	48	345	247-295

Description	Thickness in feet: Interval	Cumulative	Feet above base
fine-grained, mostly replaced by limonite-stained calcite. At 290 feet, limestone--much dolomite in an aphanitic to microgranular matrix, in part indistinctly pelleted and intraclastic; silt very scarce, mostly authigenic feldspar; large areas of microgranular dolomite may be intraclasts, rest of dolomite mostly 0.1 to 0.15 mm, mostly fresh, some slightly hematite stained, replaces matrix; one vein of fine- to coarse-grained calcite cut by stylolites with limonitic clay and silt along them. At 292 feet, limestone--mostly densely aphanitic, with lighter, aphanitic wavy bands indicating stromatolitic structure; one calcareous brachiopod shell; much microgranular dolomite, very fresh; silt scarce, mostly authigenic feldspar; veins of medium-grained calcite offset along stylolites with limonitic clay along them.			
18. Limestone and covered--lower 5 feet very fine to coarse grained; dolomitic; much very fine sand and some silt, mostly authigenic feldspar some detrital centers; biotite and glauconite common; one sample of residue from 240 to 245 feet is similar except detrital feldspar is mostly clear followed by clear overgrowths, biotite and glauconite abundant; rest of interval covered, probably shale as indicated by local folding of adjacent beds.	16	361	231-247
Thin sectioned at 232 feet. Limestone--trilobite and pelmatozoan debris, a few phosphatic brachiopod fragments, glauconite and intraclasts mostly in an aphanitic, pelleted matrix, a little microgranular- to fine-grained, clear calcite; intraclasts and cavity fillings in fossils, densely aphanitic, in part slightly fossiliferous, silty, glauconitic, limonitic, pelleted, dolomitic; dolomite fine-grained, replaces intraclasts and fossil fillings, altered to calcite and			

Description	Thickness in feet: Interval	Cumulative	Feet above base
limonite; silt mostly authigenic feldspar; glauconite fragmental; some weathered biotite; stylolites indistinct.			
19. Limestone--coarse-grained; mostly pale-yellowish-orange to grayish-orange; residue very small; large ripple marks on top surface indistinct; 10 inches of intraformational conglomerate at base of interval; thick-bedded, bottom bed 7 feet, followed by 1-foot bed, 4-foot bed, and a top 2-foot bed.	14	375	217-231
A sample from 228 feet containing girvanella and hexactinellid spicules and another from 229 feet containing hyolithids(?) and trilobites were thin sectioned. At 228 feet, limestone--a little trilobite and pelmatozoan debris and a few finely radiate fossils in an aphanitic matrix; matrix about half replaced by 0.1-mm dolomite with finely radiate fossils and pelmatozoan debris that is not dolomitized; some pelmatozoan debris replaced by chert; silt scarce, mostly authigenic feldspar; stylolites indistinct. At 229 feet, limestone--much well-rounded pelmatozoan debris and numerous trilobite fragments, both with radial calcite about them, in some faintly pelleted, aphanitic matrix; glauconite fragmental, very scarce; dolomite, 0.1 to 0.2 mm, replaces cavity fillings and intraclasts(?), slightly replaced by calcite and limonite; stylolites of large amplitude truncate dolomite rhombs, showing that the stylolites are younger.			
Eastward this interval is stromatolitic reef.			
Point Peak Member: 94 feet thick			
20. Siltstone, limestone, and shale--siltstone mostly yellowish-gray and darker, slightly micaceous, calcareous, 0.25- to 1-inch beds separated by shale films; limestone intraformational conglomerate at 206 feet, of variable thickness but averages about	13	388	204-217

Description	Thickness in feet: Interval	Cumulative	Feet above base
2 inches, at 207.5 feet, 1 to 6 inches, contains two doughnut-shaped stromatolites, and from 208 to 209, 211 to 211.5, and 215 to 215.5 feet; residue mostly nonaggregated feldspar, some quartz, much biotite, and some glauconite in fine sand and silt sizes; feldspar mostly detrital, much of it clear, consequently authigenic portion difficult to see.			
SHIFT downstream eastward about 1,200 feet continue section down bluff.			
Fossils collected by Ellinwood from 204 feet, *Billingsella corrugata inornata* Ellinwood, *Palaeostrophia* sp., and *Plectotrophia alata* (Walcott).			
Fossils collected by Bell from 212± and from 215± feet, silicified orthid brachiopod.			
21. Limestone--stromatolitic reefs and coarse-grained interreef beds; upstream this interval grades to shale and sporadically distributed reefs.	3	391	201-204
Fossils collected by Ellinwood from 201 feet, chariocephalid or saukid.			
Fossils collected by Bell from 203 feet, *Palaeostrophia* sp., trilobite, gastropod, and *Billingsella corrugata inornata* Ellinwood.			
22. Siltstone, limestone, and shale--siltstone calcareous, mostly 0.25- to 1-inch beds, a few as much as 2 inches, mostly alternates with shale, light-brownish-gray, a 6-inch bed from 188 to 188.5 feet; limestone intraformational conglomerate from 188.5 to 189 feet, at 192 and 193 feet, 2-inch beds, at 195.5 feet, a 3-inch bed, from 197.5 to 198 feet, one bed; residue similar to that from 204 to 217 feet, in part aggregated.	13	404	188-201

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Ellinwood from 188 feet, Plectotrophia alata (Walcott) and Briscoia sp.			
23. Limestone--stromatolitic reefs microgranular to aphanitic, pale-red mottled light-brownish-gray and light-olive-gray; interreef beds coarse-grained, light-olive-gray in part mottled by dark-yellowish-orange; some intraformational conglomerate.	2	406	186-188
24. Siltstone,limestone, and shale--siltstone yellowish-gray to darker, calcareous, micaceous, beds mostly 1 to 4 inches each composed of many closely spaced laminae, trails common; mostly alternates with shale, light-brownish-gray, slightly micaceous; residue mostly fine sand and silt-size feldspar, quartz, biotite, and glauconite scarce, feldspar appears to be mostly detrital but abundant rhombic shapes belie this.	17	423	169-186
From 169 to 171.5 feet, siltstone; 171.5 to 172 feet, shale; 172 to 174 feet, siltstone, much shale; 174 to 177 feet, mostly 1- to 6-inch siltstone beds; 177 to 182.5 feet, mostly 1- to 0.25-inch siltstone beds and shale films, trails numerous, a 2-inch limestone intraformational conglomerate at 178 feet; 182.5 to 183 feet, intraformational conglomerate; 183 to 186 feet, thin-bedded siltstone and shale, somewhat slumped.			
SHIFT 500 feet eastward using interval from 186 to 188 feet for making shift.			
25. Siltstone,shale, and limestone--from 160 to 180 feet, mostly siltstone calcareous, in 0.25- to 4-inch beds, alternates with thin shale films, residue similar to above, trails uncommon, some minute interference ripples; limestone intraformational conglomerate at about 162.5 and 179 feet, 4-inch beds;	26	432	160-186

Description	Thickness in feet: Interval	Cumulative	Feet above base
siltstone from 180 to 186 feet, very poorly exposed. Some poorly preserved orbiculoids from 180 to 186 feet.			
Continue downstream along foot to bluff.			
26. Siltstone and shale--siltstone calcareous, residue similar to above, beds mostly 1 to 4 inches separated by thin shale films, trails uncommon. A trilobite found as float is probably from this interval. Fossils collected by Ellinwood from 155 to 160 feet, Ptychaspis sp.	5	437	155-160
27. Siltstone or limestone--lower 11 feet silty limestone or calcareous siltstone, residue similar to above, mostly thinly bedded, alternates with shale films, exposures sporadic except in upper 5 feet; upper 6 feet similar except for some 2- to 3-inch beds in upper part, trails and minute interference ripples common, lower 4 feet sporadically exposed, rest well-exposed. Fossils collected by Ellinwood from 138.5 feet, Drumaspis idahoensis Resser, Ellipsocephaloides silvestris Resser, and uniden. fragment of cranidium.	17	454	138-155
Cross fence at 149 feet.			
28. Limestone and shale--mostly limestone fine-grained, medium light gray, mostly weathers pale olive; glauconite and mica in very fine grains; much very fine sand and some silt, mostly detrital feldspar, some quartz; separated by thin, greenish-gray, shale films. From 123 to 126.5 feet, fine-grained, nodular appearing, massive, burrowed, a few inches of coarse-grained limestone at 125.5 feet; 126.5 to 128.5 feet, alternate paper-thin shale beds and	15	469	123-138

Description	Thickness in feet: Interval	Cumulative	Feet above base
0.5-inch limestone beds; 128.5 to 130 feet, fine-grained, nodular, much burrowed, fairly well bedded; 130 to 131 feet, fine-grained beds, 1 to 2 inches; 131 to 134 feet, alternate fine-grained limestone and shale, very thinly bedded, mostly shale in lower part, less shaly upward with beds up to an inch in thickness; 134 to 135 feet, limestone medium-grained, forms a resistant ledge; 135 to 138 feet, limestone fine-grained, beds mostly 1 to 2 inches separated by thin, irregular shale films.			
Morgan Creek Limestone Member: 114 feet thick			
29. Limestone--in part coarse-grained; mostly yellowish-gray with a light-olive-gray cast, rest mostly light-brownish-gray; dolomite specks up to 1/8 inch, pale- to dark-yellowish-orange common; glauconitic; mostly fossiliferous; beds mostly 6 to 12 inches, some 3 feet. Fine-grained part mostly pale-olive, glauconitic, burrowed, nodular, silty to argillaceous; residue mostly very fine sand, silt, some fine sand and toward bottom medium grains scarce, detrital feldspar and quartz about equally abundant, mica and glauconite very common, authigenic feldspar as overgrowths scarce.	33	502	90-123
From 90 to 90.5 feet, fine-grained; 90.5 to 94.5 feet, coarse-grained, abundant ooids near middle; 94.5 to 95.5 feet, fine-grained; 95.5 to 98 feet, coarse-grained; 98 to 99 feet, fine-grained; 99 to 100 feet, coarse-grained, patches of moderate-yellowish-brown weathering dolomite on top surfaces and dolomitized objects throughout; 100 to 103 feet, coarse-grained, a few ooids in top bed; 103 to 103.5 feet, fine-grained; 103.5 to 104.5 feet, coarse-grained, slightly oolitic; 104.5 to 106 feet, fine-grained;			

Description	Thickness in feet: Interval	Cumulative	Feet above base
106 to 109 feet, coarse-grained, pisolitic(?), patches of moderate-yellowish-brown weathering dolomite on top surface; 109 to 110 feet, coarse-grained, oolitic, small dolomite patches on top surface.			
From 110 to 111 feet, stromatolites 20 to 25 feet in diameter, up to 18 inches thick, and 100 to 200 feet apart, in bedded limestone the lower part of which is coarse-grained, oolitic, cross-bedded; upper part fine-grained, greenish-gray, micaceous, beds separated by thin shale films, arch over reefs and contain girvanella.			
From 111 to 112 feet, coarse-grained, mottled by dusky-yellow dolomite; 112 to 113 feet, fine-grained, recessive; 113 to 119 feet, coarse-grained, many dolomite mottles, fossil debris replaced by dolomite; 119 to 120.5 feet, fine-grained; 120.5 to 122 feet, coarse-grained, dolomite mottles and replacements common, ripple-marked on upper surface; 122 to 122.5 feet, fine-grained, recessive; 122.5 to 123 feet, coarse-grained, light-brownish-gray, dolomite replacements common.			
Fossils collected by Ellinwood from 90 feet, Conaspis masonensis Ellinwood, Conaspis parvafrons Kurtz, Taenicephalus sp. B, and aglaspid fragment; from 103 feet, Billingsella texana Bell and Ptychaspis bullasa Lochman and Hu; from 111.5 feet, Billingsella texana Bell, Pseudagnostus cf. P. communis (Hall and Whitfield), Saratogia fria Lochman and Hu, and Wilbernia pero (Walcott); from 116 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis idahoensis Resser, Idahoia sp., Ptychaspis sp., Saratogia modesta (Lochman and Hu), and Wilbernia expansa Frederickson; from 119 feet, Wilbernia expansa Frederickson, Idahoia sp., Saratogia			

		Thickness in feet		
		Interval	Cumulative	Feet above base
	modesta (Lochman and Hu), and Drumaspis idahoensis Resser; from 120 feet, Wilbernia expansa Frederickson, Idahoia sp., Saratogia modesta (Lochman and Hu), and Drumaspis idahoensis Resser. Fossils collected by Bell from 92.5 feet, Idahoia lirae (Frederickson), Idahoia lirae (Frederickson), var. A. Bell, in Bell and Ellinwood, Wilbernia expansa Frederickson, linguloid, and pelmatozoan columnals; from 94.5 feet, Idahoia lirae (Frederickson), Wilbernia diademata (Hall), Wilbernia expansa Frederickson, and Ptychaspis bullasa Lochman and Hu; from 101 feet, Billingsella texana Bell, Saratogia fria Lochman and Hu, and Ptychaspis bullasa Lochman and Hu; from 109 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, Ptychaspis bullasa Lochman and Hu, Saratogia fria Lochman and Hu, Saratogia modesta (Lochman and Hu), Wilbernia pero (Walcott), Billingsella texana Bell, and Sinuella minuta Knight; from 111 feet, Drumaspis idahoensis Resser and Saratogia fria Lochman and Hu.			
30.	Limestone--mostly stromatolitic reef heads, microgranular- to fine-grained, yellowish-gray and light-olive-gray, separated by medium- to coarse-grained septa, about 18 inches thick, in places rests on fine-grained limestone. Thin sectioned at 90 feet. Limestone--mostly trilobite debris with radial calcite and secondarily enlarged pelmatozoan debris, some very fine sand, silt, and glauconite in a little aphanitic matrix; sand and silt, mostly feldspar, mostly authigenic, some detrital, some quartz; glauconite mostly fragmental, a few grains rounded to lobate, some formed from hydrobiotite; dolomite, fine-grained, replaced fossil fillings, fossils, and some matrix.	1	503	89-90

Description	Thickness in feet: Interval	Cumulative	Feet above base
31. Limestone--alternating coarse- and fine-grained beds. Coarse-grained mostly between yellowish-gray and light-olive-gray, some pale-red; mostly glauconitic; many beds cross-bedded; mostly 6 to 12 inches, some thicker; stylolitic. Fine-grained, mostly pale-olive and light-olive-gray to pale-yellowish-brown; glauconitic; silty; argillaceous; extensively burrowed producing a nodular appearance; residue mostly very fine to medium sand and silt, a few coarse grains below 85 feet, mostly quartz, much detrital feldspar and glauconite; some mica.	46	549	43-89
From 43 to 43.5 feet, a coquinite of small calcareous brachiopods; 43.5 to 45 feet, coarse-grained, a 4-inch fine-grained bed near middle; 45 to 45.5 feet, fine-grained; 45.5 to 46 feet coarse-grained *Eoorthis* coquinite; 46 to 48 feet, alternate coarse- and fine-grained beds, coarse ones mostly calcareous brachiopod coquinite; 48 to 50.5 feet, fine-grained, nodular, slightly argillaceous, 50.5 to 51.5 feet, coarse-grained calcareous brachiopod coquinite; 51.5 to 54.4 feet, fine-grained, nodular, argillaceous; 54.5 to 55 feet, coarse-grained; 55 to 56 feet, fine-grained, argillaceous; 56 to 56.5 feet, coarse-grained; 56.5 to 57.5 feet, fine-grained; 57.5 to 58 feet, medium-grained, many grayish-orange to dark-yellowish-orange "mud balls"(?); 58 to 59.5 feet, fine-grained; 59.5 to 60.5 feet, coarse-grained, light-brownish-gray, oolitic; 60.5 to 61.5 feet, fine-grained; 61.5 to 62 feet, medium-grained, some pale-yellowish-orange dolomite patches, near bottom "mud balls"(?); 62 to 62.5 feet, cross-beds of glauconite and coarse-grained limestone, grayish-olive-green; 62.5			

Description	Thickness in feet: Interval	Cumulative	Feet above base
to 63 feet, shale, recessive; 63 to 66 feet, coarse-grained, slightly oolitic, streaked light-brownish-gray; 66 to 67.5 feet, medium-grained, mottled; 67.5 to 69 feet, coarse-grained, sandy, sand coarse, cross-bedded, very glauconitic; 69 to 71 feet; fine-grained; 71 to 71.5 feet, coarse-grained, oolitic; 71.5 to 73 feet, fine-grained; 73 to 76 feet, coarse- and medium-grained, somewhat sandy, sand fine to medium, cross-bedded; 76 to 77.5 feet, fine-grained; 77.5 to 78.5 feet, coarse-grained, grayish-red; 78.5 to 79.5 feet, fine-grained, thin-bedded, numerous trails but little burrowed; 79.5 to 80 feet, coarse-grained; 80 to 81 feet, medium- and fine-grained, light-olive-gray mottled by dark-yellowish-orange, argillaceous toward top; 81 to 85.5 feet, coarse-grained, minor amount of medium- to fine-grained, bottom bed very oolitic; 85.5 to 86 feet, fine-grained; 86 to 87.5 feet, coarse-grained, some fine-grained at top; 87.5 to 89 feet, coarse-grained, some moderate-yellowish-brown dolomite specks.			
Thin sectioned at 68 feet. Limestone--much trilobite debris with radial calcite, much indistinct secondarily enlarged pelmatozoan debris, and much glauconite and sand in a fine to coarse, calcite mosaic (Pl. 15, fig. 6, Pl. 16, fig. 1) possibly in part from secondarily enlarged pelmatozoan debris; sand very fine to medium, angular, mostly quartz, much feldspar, mostly detrital, a few rhombs probably authigenic; glauconite rounded to fragmental; dolomite very fine grained, replaces fossil fillings, scarce.			
Fossils collected by Wilson from 43.5 feet, Linnarssonella girtyi			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Walcott, linguloid fragments, and micromitrid.			
Fossils collected by Ellinwood from 43.5 feet, Pterocephalia sanctisabae Roemer, Camaraspis convexa (Whitfield), and Ocnerorthis sp.; from 44 feet, Irvingella major Ulrich and Resser, Comanchia amplooculata (Frederickson), and Lingulella acutangula (Roemer); from 46.5 feet, Parabolinoides contractus Frederickson, Parabolinoides granulosus Ellinwood, Billingsella coloradoensis (Shumard), Eoorthis indianola (Walcott), and Eoorthis remnicha (Winchell); from 47 feet, Eoorthis remnicha (Winchell), Billingsella coloradoensis (Shumard), Parabolinoides contractus Frederickson, and Parabolinoides granulosus Ellinwood; from 48.5 feet, Orygmaspis llanoensis (Walcott), var. A. Longacre; from 55 feet, Huenella abnormis (Walcott), Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), and Wilbernia halli Resser, var. A. Ellinwood; from 60 feet, Huenella abnormis (Walcott) Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), Taenicephalus shumardi (Hall), Wilbernia halli Resser, var. A. Ellinwood, and pelmatozoan; from 60.5 feet, Huenella abnormis (Walcott), Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), and Taenicephalus shumardi (Hall); from 62 feet, Orygmaspis llanoensis (Walcott), Taenicephalus shumardi (Hall), and Wilbernia halli Resser; from 68 feet, Billingsella cf. B. coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), Taenicephalus shumardi (Hall), and Wilbernia halli Resser; from 69 feet, Taenicephalus shumardi (Hall) and Wilbernia halli Resser; from 74 feet, Billingsella texana Bell; from 76 feet, Billingsella texana Bell and Taenicephalus shumardi (Hall); from 77 feet, Billingsella texana Bell and Pseudagnostus cf. P. communis			

Description	Thickness in feet: Interval	Cumulative	Feet above base
(Hall and Whitfield); from 84 feet, Taenicephalus shumardi (Hall) and Wilbernia expansa Frederickson.			
Fossils collected by Bell from 43.5 feet, Camaraspis convexa (Whitfield), Dellea suada (Walcott), Dokimocephalus intermedius (Resser), Elvinia roemeri (Shumard), Linnarssonella girtyi Walcott, and Ocnerorthis sp.; from 45 feet, "Lingulella" acutangula (Roemer), Pseudodicellomus? sp., Irvingella major Ulrich and Resser, Sulcocephalus candidus (Resser), and Comanchia amplooculata (Frederickson); from 47.5 feet, Parabolinoides contractus Frederickson, Billingsella coloradoensis (Shumard), Angulotreta microscopica (Shumard), and Ceratreta hebes Bell; from 50 feet, Taenicephalus gouldi (Frederickson), Billingsella coloradoensis (Shumard), Angulotreta microscopica (Shumard), and Pseudodicellomus mosaicus (Bell); from 54 feet, Orygmaspis llanoensis (Walcott), Taenicephalus gouldi (Frederickson), Billingsella coloradoensis (Shumard), Huenella abnormis (Walcott), and Pelagiella sp.; from 58 feet, Orygmaspis llanoensis (Walcott) and Taenicephalus shumardi (Hall); from 67 feet, Orygmaspis llanoensis (Walcott), Taenicephalus shumardi (Hall), and Wilbernia halli Resser; from 72 feet, Taenicephalus shumardi (Hall), Wilbernia cf. W. halli Resser, and Orygmaspis llanoensis (Walcott); from 83 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Taenicephalus aff. T. shumardi (Hall), and Wilbernia expansa Frederickson.			
Fossils collected by Bell and Ellinwood from 46 feet, Parabolinoides contractus Frederickson, Parabolinoides granulosus Ellinwood, Eoorthis indianola (Walcott), Eoorthis remnicha (Winchell), and pygidium undet.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
32. Limestone--mostly coarse-grained, some fine-grained; sandy, sand mostly very fine to medium, some coarse to very coarse in bottom sample, mostly quartz, much feldspar mostly with thin authigenic overgrowths, mostly angular, coarser grains well-rounded; some mica; glauconitic; beds mostly 6 to 12 inches; stylolitic.	28	577	15-43
From 15 to 15.5 feet, fine-grained, between yellowish-gray and light-olive-gray, glauconitic, silty, much burrowed; 15.5 to 19 feet, coarse-grained, grayish-red; 19 to 20 feet, fine-grained, much burrowed; 20 to 22 feet, coarse-grained, grayish-red to light-brownish-gray, some pale-yellowish-orange "mud ball"(?) conglomerate, "mud balls"(?) in top 2 inches rimmed by dark-yellowish-orange; 22 to 24 feet, fine-grained, between greenish-gray and light-olive-gray, much burrowed, a layer of "mud ball"-like material on top surface; 24 to 25 feet, coarse-grained, pale-red to light-brownish-gray, somewhat cross-bedded, some rimmed "mud balls"(?); 25 to 25.5 feet, recessive, not exposed; 25.5 to 28 feet, coarse-grained, pale-red to light-brownish-gray, some rimmed "mud balls"(?); 28 to 31.5 feet, mostly fine-grained, burrowed, 5 inches coarse-grained, cross-bedded at 29 feet, about 3 inches at 30.5 feet; 31.5 to 32.5 feet, coarse-grained, pale-red to light-olive-gray, a few "mud balls"(?); 32.5 to 33 feet, fine-grained, light-olive-gray, weathers to moderate-yellowish-brown, silty, argillaceous, burrowed; 33 to 34 feet, coarse-grained, pale-red to light-olive-gray, a few "mud balls"(?); 34 to 34.5 feet, fine-grained, light-olive-gray, weathers			

Description	Thickness in feet: Interval	Cumulative	Feet above base
medium-yellowish-brown, silty, argillaceous, burrowed; 34.5 to 35.5 feet, coarse-grained; 35.5 to 36.5 feet, mostly fine-grained, some coarse-grained; 36.5 to 37 feet, coarse-grained; 37 to 37.5 feet, fine-grained; 37.5 to 38 feet, coarse-grained; 38 to 38.5 feet, fine-grained; 38.5 to 39 feet; coarse-grained, except for 2 inches of fine-grained at top; 39 to 43 feet, coarse-grained, dark-yellowish-orange dolomite patches common, two beds, lower one 3 feet, upper one 1 foot thick serving as rock-crossing ford.			
Fossils collected by Wilson from 19.5 feet, Kindbladia wichitaensis (Resser); from 23 feet, Linnarssonella girtyi Walcott, Kindbladia wichitaensis (Resser), Elvinia roemeri (Shumard), Angulotreta sp., and linguloid; from 28 feet, Linnarssonella girtyi Walcott, Elvinia roemeri (Shumard), and linguloid; from 34.5 feet, Linnarssonella girtyi Walcott and linguloids types A and B; from 37 feet, Linnarssonella girtyi Walcott, Elvinia roemeri (Shumard), Camaraspis convexa (Whitfield), Dokimocephalus intermedius (Resser), Dellea suada (Walcott), Pterocephalia sanctisabae Roemer, Burnetiella urania (Walcott), and Dellea sp.; from 39 feet, Linnarssonella girtyi Walcott, Elvinia roemeri (Shumard), Camaraspis convexa (Whitfield), Dellea suada (Walcott), Dokimocephalus intermedius (Resser), and Pterocephalia sanctisabae Roemer; from 39.5 feet, Elvinia roemeri (Shumard), Camaraspis convexa (Whitfield), and Pterocephalia sanctisabae Roemer; from 42.5 feet, Linnarssonella girtyi Walcott, Elvinia roemeri (Shumard), Camaraspis convexa			

Description	Thickness in feet: Interval	Cumulative	Feet above base
(Whitfield), Dokimocephalus curtus (Resser), Dellea suada (Walcott), and Pterocephalia sanctisabae Roemer. Fossils collected by Bell from 37 feet, Camaraspis convexa (Whitfield), Elvinia roemeri (Shumard), Dokimocephalus intermedius (Resser), Pterocephalia sanctisaba Roemer, Cliffia lataegenae (Wilson), and Linnarssonella girtyi Walcott. Fossils collected by Fred M. Bullard from 37+ feet, Camaraspis convexa (Whitfield), Cliffia lataegenae (Wilson), Dokimocephalus intermedius (Resser), and Pterocephalia sanctisabae Roemer.			
33. Limestone--coarse-grained; mostly grayish-red, some light-brownish-gray; very sandy, bottom few feet possibly more than 50 percent sand, fine to very coarse, a few angular granules, some coarse fairly well-rounded, rest subrounded to angular, mostly quartz, feldspar scarce; glauconite common; beds mostly 4 to 10 inches.	6	583	9-15
Wedge Sandstone Member: 9 feet described			
34. Sandstone--medium- to coarse-grained coarsening upward to 0.25-inch pebbles at top; mostly yellowish-brown and pale- to dark-yellowish-orange, top bed pale-yellowish-brown, light-olive-gray where glauconitic; grains well-rounded to angular, mostly rough, a few smooth, in part slightly reconstituted, several chatter marked, poorly sorted, almost entirely quartz; scattered glauconite in a few beds; calcareous toward top; massive. Fossils collected by Wilson from 8 feet, Elvinia roemeri (Shumard), Plataspella anatina (Resser), and linguloid fragments.	9	592	0-9

Table 32. Insoluble residue content, Camp San Saba section, McCulloch County, Texas.

Feet above base	Percent residue	Feet above base	Percent residue	Feet above base	Percent residue
590-592	5.8	455-460	5.5	335-340	3.6
585-590	4.1	450-455	5.9	330-335	2.5
570-580	5.9	445-450	12.1	325-330	6.3
560-570	5.7	440-445	9.3	320-325	5.4
550-560	6.3	435-440	5.7	315-320	4.6
545-550	7.8	425-430	4.2	305-310	12.4
540-545	7.2	420-425	3.1	295-300	13.5
535-540	4.6	415-420	3.1	290-295	5.7
530-535	6.7	413-415	5.0	285-290	5.2
525-530	8.9	410-413	5.1	280-285	6.7
520-525	6.6	405-410	1.8	275-280	2.6
516-520	7.6	400-405	4.6	270-275	4.4
510-516	5.4	395-400	5.6	265-270	4.1
505-510	6.6	390-395	5.2	260-265	5.1
500-505	6.8	380-385	10.2	255-260	3.6
495-500	6.1	375-380	5.1	250-255	2.6
490-495	3.8	370-375	2.9	245-250	3.7
485-490	10.2	365-370	4.8	240-245	14.3
480-485	3.5	360-365	7.6	235-240	3.6
475-480	4.4	355-360	4.3	230-235	10.9
470-475	8.2	350-355	3.3	225-230	6.2
465-470	4.9	345-350	2.1	215-220b	21.9
460-465	5.8	340-345	1.2	215-220a	13.5

Table 32
(continued)

Feet above base	Percent residue	Feet above base	Percent residue
210-215	54.3	100-105	14.3
205-210	17.2	95-100	22.8
200-205	20.3	90-95	13.8
195-200	47.9	85-90	15.7
190-195	47.3	80-85	25.8
185-190	23.3	75-80	28.3
180-185	58.7	70-75	31.8
175-180	55.5	65-70	24.4
170-175	68.3	60-65	34.1
165-170	57.9	55-60	31.1
160-165	58.5	50-55	27.3
155-160	68.5	45-50	17.1
150-155	69.2	40-45	11.8
145-150	62.0	35-40	20.7
140-145	62.9	30-35	20.7
135-140	48.2	25-30	20.6
130-135	40.4	20-25	27.0
125-130	43.1	15-20	32.5
120-125	38.1	10-15	27.9
115-120	13.7	5-10	48.4
110-115	12.0	0-5	75.3
105-110	13.7		

Brook's Katemcy Ranch Stratigraphic Section, McCulloch County

The top of this section is 1,300 feet east of U.S. Highway 87 at a point 2.8 miles south of Camp San Saba post office and is along the north side of the road to Brook's Katemcy ranch headquarters. The bottom of the section is 4,000 feet southeast of the point where the road to Brook's Katemcy ranch leaves U.S. Highway 87 (Part 1, Pl. 7, fig. 7). The section was measured and fossils collected by Bell and Barnes during August 1947.

Thicknesses of units in the Brook's Katemcy Ranch section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Moore Hollow Group (375 feet measured)		
Wilberns Formation (90 feet measured)		
Morgan Creek Limestone Member	60+	315-375
Welge Sandstone Member	30	285-315
Riley Formation (285 feet measured)		
Lion Mountain Sandstone Member	65	220-285
Cap Mountain Limestone Member	205	15-220
Hickory Sandstone Member	15+	0-15

Description of Section

Description	Thickness in feet Interval	Cumulative	Feet above base
Moore Hollow Group: 375 feet described			
Wilberns Formation: 90 feet described			
Morgan Creek Limestone Member: 60 feet described			
1. Granular limestone.	55	55	320-375
2. Sandy limestone.	5	60	315-320
Welge Sandstone Member: 30 feet thick			
3. Sandstone.	30	90	285-315
Riley Formation: 285 feet described			
Lion Mountain Sandstone Member: 65 feet thick			
4. Greensand.	25	115	260-285

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected from 280 feet, *Listroa longifrons* (Palmer), and linguloids A and B.			
5. Covered.	25	140	235-260
Fossils from 235 feet, *Aphelaspis walcotti* Resser, *Angulotreta triangularis* Palmer, *Angulotreta triangularis digitalis* Palmer, linguloid A, pelmatozoan columnals and plates, and *Paterina* fragments.			
6. Greensand and trilobite coquinite lenses.	15	155	220-235
Cap Mountain Limestone Member: 205 feet thick			
7. Mostly covered, pebbly limestone at 80 feet.	160	315	60-220
Fossils from 80 feet, *Maryvilla* sp., *Tricrepicephalus thoosa* (Walcott), *Coosella* cf. *C. beltensis* Lochman, and *Coosina* cf. *C. ariston* (Walcott).			
8. Silty limestone.	35	350	25-60
Fossils from 40 feet, *Tricrepicephalus* sp., *Coosia connata* (Walcott), large *Kinsabia*(?) sp., *Micromitra* sp., and linguloid.			
9. Sandy limestone.	10	360	15-25
Hickory Sandstone Member: 15 feet described			
10. Red sandstone.	15	375	0-15
Fossils from 0 feet, *Dicellomus* sp.			

Sell Highway Material Pit Stratigraphic Section, Mason County

The section was measured and described October 31, 1957, by Barnes and sampled by James Pegg as part of a study of the possible commercial uses of the Cambrian sandstones in the northwestern part of the Llano region (Barnes and Schofield, 1964). The section is near the northern end of the highway material pit on the H. Sell farm 1,600 feet west of U. S. Highway 87, at a point 1.4 miles north of Camp Air (Part 1, Pl. 7, fig. 8).

Description of Section

Description	Thickness in Feet Interval	Cumulative	Feet above base
Moore Hollow Group: 34 feet described			
Riley Formation: 34 feet described			
Cap Mountain Limestone: 2 feet described			
1. Limestone or sandstone--either a very sandy limestone or a very calcareous sandstone, sand very fine to very coarse, larger grains mostly well-rounded, rest mostly angular, medium-brown, thin-bedded.	2	2	32-34
Thin sectioned at 33 and 34 feet. At 33 feet, sandstone or limestone--almost equally very fine to medium sand and fine-grained dolomite replaced by calcite and goethite; phosphatic brachiopod debris common; black dendritic mineral similar in occurrence to that at 32 feet, also forms small masses enclosing sand grains and replaces phosphatic brachiopod debris. At 34 feet, sandstone--very fine to medium grained; larger grains well-rounded, others mostly angular; matrix mostly dolomite replaced by goethite and calcite similar to that at 33 feet; some calcite cement medium- to coarse-grained, poikilitic; phosphatic brachiopod debris common.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Hickory Sandstone Member: 32 feet described			
2. Sandstone--mostly fine- to coarse-grained, some very coarse grained; light-brown streaked bv grayish-red; calcareous; cross-bedded; larger grains well-rounded, rest mostly angular; phosphatic brachiopods common.	5	7	27-32
Thin sectioned at 28 and 32 feet. At 28 feet, sandstone--mostly fine- to medium-grained; grains mostly angular, a few larger ones well-rounded; cemented at one end by hematite, rest by calcite, mostly fine-grained, semi-poikilitic, some replaces fine-grained dolomite and contains abundant goethite; dolomite appears to have originally replaced pelmatozoan fragments and accumulated around trilobite debris; elsewhere goethite forms very thin films around sand grains; phosphatic brachiopod debris common; a few black opaque minerals; a black, dendritic mineral forms at center of altered dolomite. At 32 feet, sandstone--very fine to very coarse grained; medium to very coarse, very well rounded grains relatively scarce, rest angular; much pelmatozoan debris replaced by goethite, numerous goethite ooids up to 0.9 mm, much goethite matrix speckled by minute brown to black dendrites that originally may have been dolomite that was replaced by goethite and calcite; some calcite cement, poikilitic, medium- to coarse-grained; phosphatic brachiopod debris abundant.			
3. Sandstone--very fine to coarse grained; dusky-red, grayish-red, pale reddish-brown, light brown; hematitic beds both massive and burrowed interbedded with light brown calcareous beds; cross-bedded; phosphatic brachiopods abundant.	10	17	17-27

Description	Thickness in feet: Interval	Cumulative	Feet above base
Thin sectioned at 18, 20, 22, 23 and 27 feet. At 18 feet, sandstone--very fine to coarse grained; similar to that at 15 feet, except hematite matrix is along some beds. At 20 feet, sandstone--very fine to coarse grained; similar to that at 4 feet, except for the presence of trilobite debris ghosts, that the matrix is all hematite, and that some pelmatozoan debris is invaded by goethite. At 22 feet, sandstone--very fine to coarse grained; similar to that at 3 feet, except calcite matrix is mostly fine to very fine grained, numerous ooids appear to have been entirely replaced by calcite crystals that extend beyond ooid boundaries, relative abundance of trilobite and pelmatozoan debris is reversed, some pelmatozoan debris is almost entirely replaced by goethite, and intraclasts are more abundant; intraclasts are in part composed of sand grains and phosphatic brachiopods in goethite matrix, in part of sand in goethite matrix, and one contains a goethite ooid. At 23 feet, sandstone--very fine to coarse grained; much fine-grained, irregular mosaic, calcite cement and secondarily enlarged pelmatozoan debris; larger sand grains well-rounded, smaller ones angular; goethite coats sand from merest films to thick coats, rarely occurs as ooids and replacement of secondarily enlarged pelmatozoan debris; phosphatic brachiopods common. At 27 feet, sandstone--fine- to coarse-grained; much goethite as matrix, ooids and pelmatozoan replacement; hematite scarce, confined to bands in ooids; fine to very fine grained calcite matrix scarce; phosphatic brachiopod debris common.			
SHIFT from northernmost part of quarry to point between this part of quarry and main quarry.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
4. Sandstone--very fine to very coarse grained; grayish-red, moderate-brown; alternating burrowed hematitic beds and moderate-brown calcitic beds; abundant phosphatic brachiopods.	10	27	7-17
Thin sectioned at 8, 12, 13 and 15 feet. At 8 feet, sandstone--very fine- to very coarse-grained; similar to that at 3 feet, except that calcite matrix is fine-grained, some hematite cement is at one end of thin section, and feldspar is very scarce. At 12 feet, sandstone--very fine- to coarse-grained; similar to that at 4 feet, except that hematite is mostly interstitial, calcite cement is absent, and phosphatic brachiopods are numerous. At 13 feet, sandstone--very fine- to coarse-grained; similar to that at 3 feet, except calcite matrix is mostly fine- to medium-grained, ooids are more abundant, and hematite and phosphatic brachiopods are less abundant. At 15 feet, sandstone--very fine- to coarse-grained; similar to that at 3 feet, except pelmatozoan debris and ooids are more abundant, the latter coalescing in some areas, and calcite matrix is mostly fine- to medium-grained.			
5. Sandstone--very fine- to coarse-grained, grayish-red, burrowed, phosphatic brachiopods abundant.	3	30	4-7
Thin sectioned at 4 feet. Sandstone--very fine to coarse grained; grains similar to those at 3 feet, except feldspar is very scarce and mostly replaced by iron oxide; composite grains more numerous with iron oxide penetrating along grain boundaries, and black opaque grains absent; matrix mostly dusky-red, silty hematite in part in large patches and in part			

Description	Thickness in feet: Interval	Cumulative	Feet above base
interstitial, some very fine-grained calcite; ooids up to 0.7 mm, numerous, mostly goethite, some similar to those at 3 feet; sand grains mostly coated by goethite even where matrix is hematite, suggesting that goethite coatings formed before grains came to rest; phosphatic brachiopod debris scarce.			
6. Sandstone--very fine to very coarse grained, grayish-red, calcareous, cross-bedded, phosphatic brachiopods abundant.	2.5	32.5	1.5-4
Thin sectioned at 3 feet. Sandstone--very fine to very coarse-grained; very fine and fine grains mostly angular, rest very well rounded to spherical, mostly quartz with straight extinction, bubble trains abundant, a few composite grains, many grains peripherally fractured with goethite penetration making the fractures visible, a few fine and very fine microcline grains, a few very fine, well-rounded, black, opaque grains; much hematite and goethite as coatings on sand grains and as concentric ooids up to 0.6 mm in size, centers commonly quartz, by reflected light mostly light-brown goethite, some very dusky red hematite, some shades in between, some ooids mostly goethite, some mostly hematite, and many are alternating layers of the two; trilobite debris, mostly ghosts, with radial calcite abundant, some secondarily enlarged pelmatozoan debris, rest of calcite mostly coarse-grained, poikilitic; phosphatic brachiopod shells and debris abundant; one 2-mm sandstone intraclast, sand mostly very fine, some fine, matrix dark yellowish-orange, argillaceous(?), goethite, a trilobite spine contains similar material except matrix is darker brown. Microcline is very scarce to absent above this level.			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
7.	Sandstone--very fine to coarse grained, dark reddish-brown to grayish-red, massive, phosphatic brachiopods abundant. Thin sectioned at 1 foot. Sandstone--fine to very coarse grained, poorly sorted; fine grains most abundant, angular to subrounded, coarser grains very well rounded to spherical, mostly with straight to slightly undulatory extinction, vacuole trains abundant, grains goethite coated; goethite penetrates along grain boundaries of numerous composite grains and along percussion fractures on larger grains; small microcline grains fairly numerous, in part replaced by goethite; abundant goethite ooids up to 0.8 mm in size mostly have quartz grains at their centers, some hematite replacement of goethite; matrix, hematite, in part silty; phosphatic brachiopod debris common.	1.5	34	0-1.5

Threadgill Creek Area, Mason and Gillespie Counties

Composite Threadgill Creek Section, Mason and Gillespie Counties

The Threadgill Creek section (Bridge, Barnes, and Cloud, 1947, Pl. 1) is only part of the composite Threadgill Creek section described in this report. The lower part of the Bridge, Barnes, Cloud line of section below the Morgan Creek Limestone is not included in the composite section; a more nearly complete, better exposed interval is substituted. The composite Threadgill Creek section consists of the following segments, named from the top down: Mormon Creek segment, upstream Threadgill Creek segment, downstream Threadgill Creek segment, and Squaw Creek segment.

Units exposed in each segment are listed as follows: Mormon Creek segment--Threadgill Member of the Tanyard Formation; upstream Threadgill Creek segment--all members of the Wilberns Formation except the lower part of the Welge Sandstone; downstream Threadgill Creek segment--Morgan Creek Limestone Member, Eoorthis Zone to base, Welge Sandstone Member of the Wilberns Formation, and all members of the Riley Formation except for the lower 220 feet of the Hickory Sandstone; and Squaw Creek segment--220 feet of Hickory Sandstone resting on coarse-grained granite.

The composite Threadgill Creek section straddles the Gillespie-Mason County line; the upper part is in northwestern Gillespie County and the lower part is in southern Mason County. The airline distance from the bottom to the top of the composite section is 5 miles in a south-southwest direction. The rocks, essentially unfaulted, strike about northeast, a direction only about 20 to 25 degrees from the direction of the section; this and low dips explain the great length of the section (Part 1, Pl. 8, fig. 4).

The Squaw Creek section is on the west valley wall of Squaw Creek 1 mile east of Threadgill Creek and slightly more than 1 mile above the confluence of the two streams. The base of this segment is on the Herman Evers ranch, 1,200 feet downstream from a county road, and a few feet above creek level on the west bank of Squaw Creek opposite a hunting cabin. This segment is mostly on the Reuben Evers ranch. The shift to the next segment, about 0.6 mile to the west, was made along a quartzite bed.

The downstream Threadgill Creek segment from its base follows up Threadgill Creek about 1.4 miles, then south-southeastward along a prominent drain for another 0.5 mile to the Eoorthis Zone. Short lateral shifts and a few small faults interrupt this segment. The basal part of this segment is on the Reuben Evers ranch, the middle and most of the upper part is on the W. M. Frederick ranch, and the top part is on the Henry Welge ranch. The shift to the next segment, a distance of about 1.5 miles southwestward, was made following the Eoorthis Zone to the east bank of Threadgill Creek.

The upstream Threadgill Creek segment, 0.75 mile long, is continuous from the top of the Welge Sandstone to within 63 feet of the top of the San Saba Member, and except for the topmost part is along Threadgill Creek. The base of this segment is on the C. L. Heard ranch and the top is on the Henry Welge ranch. During the shift to the Mormon Creek segment, 0.75 mile southwestward on the west bank of Threadgill Creek at a point 0.5 mile upstream (south) from Lange's Mill, the top 63 feet of the San Saba was missed. As mentioned in a footnote on page 122 of Part 1, James F. Miller discovered 54 feet of this missing section and since has discovered the remaining 9 feet. He has kindly furnished a description of this missing section and of an additional 52 feet beneath. Miller's segment has been inserted at its appropriate place in the composite Threadgill Creek section described below. The segment is on the Dennis Lange ranch.

The lower part of the Mormon Creek segment extends along Threadgill Creek 1,000 feet; from here the section follows up Mormon Creek 0.5 mile to the last good outcrop just before the Paleozoic rocks disappear beneath poorly consolidated Cretaceous rocks. The lower part of this segment is on property owned by Dennis Lange, the middle part is on property owned by Martin Andreg, and the upper 40 feet is on property owned by Otto Hahn. The top of this segment, also the top of the composite Threadgill Creek section, is on the west bank of Mormon Creek, 2,600 feet upstream from its juncture with Threadgill Creek.

Thicknesses of units in the composite Threadgill Creek section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Ellenburger Group (280 feet measured)		
Tanyard Formation (280 feet measured)		
Threadgill Member	280	1,460-1,740
Moore Hollow Group (1,450 feet)		
Wilberns Formation (600 feet)		
San Saba Member (281 feet)		
Calcitic facies	281	1,179-1,460
Point Peak Member	154	1,025-1,179
Morgan Creek Limestone Member	142	883-1,025
Welge Sandstone Member	23	860-883
Riley Formation (850* feet)		
Lion Mountain Sandstone Member	68*	782-860*
Cap Mountain Limestone Member	418	364-782
Hickory Sandstone Member	364	0-364

*See footnote, page 244, for explanation of discrepancy.

The Mormon Creek segment and the upstream Threadgill Creek segment of the composite Threadgill Creek section were first measured in January 1941 by Dr. Josiah Bridge and Barnes, accompanied by Bell and Louis Dixon. The upstream Threadgill Creek segment was remeasured later by Barnes and Dixon using a plane table and alidade; paint spots were placed at approximately 5-foot intervals. Dixon chip-sampled each interval and made fossil collections. The Mormon Creek segment was sampled by Leo Hendricks, Dixon, and Barnes in July 1941.

During April 1948, Barnes and Palmer measured the entire composite Threadgill section, laying off in 5-foot intervals the portion not previously measured. The lower 50 feet and the upper 120 feet of the upstream Threadgill Creek segment, found to be inaccurate, was not repainted, but enough correct footages were painted in these intervals so that the description of the section can be followed.

The Wilberns and Riley rocks were described by Barnes during April 1948, while Palmer chip-sampled the Riley Formation in 5-foot intervals. The Mormon Creek segment was redescribed by Barnes August 23, 1948, while Palmer determined the position of previously made fossil collections and made additional ones. Color was described from crushed samples, using a binocular microscope; field color descriptions of the same rock uncrushed are somewhat different.

Bell collected fossils from the Riley Formation and a few from the Wilberns Formation during August 1947; Palmer collected fossils from the Riley Formation during 1948; Nicholls collected intensively in the vicinity of the Cambrian-Ordovician boundary during the mid-1950's; Rousseau Flower collected cephalopods from the Wilberns and Tanyard Formations in March 1956.

For most of the Cambrian sections in the Llano region, Bell updated the original fossil lists, but for the Wilberns collections in the Threadgill Creek section this was not accomplished. Bell's original lists, although not greatly different from the updated ones in other sections, should be cross-checked against Longacre (1970) for trilobite species above the base of the *Eoorthis* bed. For each species treated, Longacre lists each section and each footage in the section at which the species occurs.

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Mormon Creek Segment			
Ellenburger Group: 280 feet described			
Tanyard Formation: 280 feet described			
Threadgill Member: 280 feet described			
1. Limestone--aphanitic; yellowish-gray to very light olive gray, weathers white; a few shale films; from 1,731 to 1,732	9	9	1,731-1,740

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	feet, numerous dolomitized anastomosing trails and burrows; meshwork dolomite yellowish-orange, weathers dark brown; beds up to 1 foot. Chert white, granular, quartzose, irregular pieces mostly on bedding surfaces, scarce. Numerous gastropods, mostly Ophileta, a few cephalopods on bedding surfaces.			
2.	Dolomite--fine-grained, grayish-orange, an upper 1-foot and a lower 2-foot bed. Phosphatic brachiopods at 1,730 feet.	3	12	1,728-1,731
3.	Limestone--aphanitic, very pale orange to pale yellowish-orange, weathers white; beds a foot or more. Chert white, granular, quartzose, scarce. Ophileta and cephalopods abundant on bedding surfaces.	9	21	1,719-1,728
4.	Dolomite--fine-grained, yellowish-orange, one bed about 18 inches thick.	2	23	1,717-1,719
5.	Limestone--aphanitic; light gray to very light olive gray, upper sample light grayish-orange, weathers white; a few thin shale films; small limonite nodules scarce; dolomitized; anastomosing burrows and trails common from 1,702 to 1,704 feet; dolomite fine-grained, moderate orange-pink to grayish-orange, some yellowish-gray, weathers in relief, a few fossils outlined by dolomite; thin-bedded and poorly exposed from 1,694 to 1,699 and 1,708 to 1,712 feet; rest mostly 6- to 12-inch beds with thicker bedded intervals from 1,699 to 1,702 and 1,705 to 1,708 feet. Chert at 1,705 and 1,713 feet, white, granular quartzose, irregular pieces.	23	46	1,694-1,717

Description	Thickness in feet: Interval	Cumulative	Feet above base
Ophileta and cephalopods abundant on bedding surfaces; at about 1,715 feet (locality 86T-16-9A), trilobites and gastropods.			
6. Covered--except for a few blocks of white weathering limestone that may not be in place.	19	65	1,675-1,694
7. Limestone--aphanitic; yellowish-gray to very light olive gray and very pale orange, weathers white; silty below 1,605 feet, silt scarce from 1,585 to 1,600 feet, silt mostly authigenic feldspar as rhombs and overgrowths around detrital grains, quartz very scarce; some muscovite; a few medium sand grains in lower few feet; limonite nodules from 1,624 to 1,625 feet and at 1,670 feet; much pyrite from 1,605 to 1,610 feet; dolomitized, anastomosing trails and burrows common from 1,572 to 1,574, 1,577 to 1,578, 1,579 to 1,585, 1,586 to 1,591, 1,602 to 1,603, 1,606 to 1,607, 1,636 to 1,638, and 1,651 to 1,652 feet; dolomite fine-grained, yellowish-orange to grayish-orange, light-brown, and very pale yellowish orange, weathers brown and in relief, at 1,603 feet almost solid dolomite, in a few other beds may be as much as 50 percent; nodular and shaly from 1,585 to 1,586 feet; nodular and thin-bedded from 1,600 to 1,602, 1,603 to 1,606, 1,612 to 1,616, 1,619 to 1,624, 1,625 to 1,636, 1,638 to 1,642, 1,643 to 1,651, 1,652 to 1,655, and 1,662 to 1,666 feet, in upper five intervals some beds up to 6 inches; nodular from 1,608 to 1,610 feet; rest mostly thick-bedded except for a few alternating nodular beds from 1,591 to 1,596 feet, and 1- to 4-inch beds from 1,596 to 1,600 feet; poorly exposed from 1,670 to 1,675 feet.	105	170	1,570-1,675

Description	Thickness in feet: Interval	Cumulative	Feet above base
Chert seen in field from 1,624 to 1,625 and 1,642 to 1,643 feet and at 1,670 feet, white, granular, quartzose; in residues common to scarce above 1,605 feet.			
Ophileta, Lytospira, Gasconadia, and a few cephalopods on bedding surfaces throughout interval.			
SHIFT westward across Mormon Creek along bed near crest of rapids, continue down in section along west bank of creek.			
8. Limestone--aphanitic, yellowish-gray to very light olive gray, weathers smooth and white; silty, silt less abundant in lower 10 feet, mostly feldspar as clear rhombs and authigenic overgrowths around detrital grains, quartz scarce; sand in residue medium to coarse, in part iron-stained, appears to be contamination from the Cretaceous; some wavy shale films; dolomitized, anastomosing trails and burrows common; dolomite fine-grained, yellowish-orange to grayish-orange, light-gray; beds from 1,530 to 1,535 feet, mostly 6 inches; from 1,535 to 1,549 feet, mostly 3 inches or less; from 1,552 to 1,570 feet, mostly 2 to 6 inches, a few up to 12 inches; from 1,549 to 1,552 feet, covered.	40	210	1,530-1,570
Chert in residue from 1,550 to 1,555 feet, white, granular, quartzose, scarce; a few quartz fragments in upper interval.			
Ophileta, Lytospira, and Gasconadia common on bedding surfaces. Locality 86T-16-9B is at about 1,557 feet and collection TF 77 was made at about 1,543 feet.			
SHIFT to the east bank at juncture of Mormon and Threadgill creeks, continue down in section to west bank of Threadgill			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Creek at 1,495 feet in section, then northeastward along Threadgill Creek.			
9. Limestone--mostly aphanitic, a few very fine grained beds; yellowish-gray to very light olive gray, weathers white; silt and very fine sand common except from 1,510 to 1,520 feet, silt and sand mostly feldspar as clear rhombs and authigenic overgrowths around detrital grains, much quartz, mostly confined to coarser fraction; a few thin shale films; dolomitized anastomosing trails and burrows abundant in upper 10 feet; dolomite fine-grained, yellowish-gray, light-gray, grayish-orange, yellowish-orange, dusky-yellow; pyrite common in lowermost bed; much small pebble and granule intraformational conglomerate, intraclasts aphanitic, angular, matrix fine-grained; bedding wavy, beds mostly 4 to 6 inches, a few up to a foot, some nodular, thin-bedded in lower part.	38	248	1,492-1,530
Thin sectioned from 1,495 to 1,500, 1,505 to 1,510 and 1,510 to 1,515 feet, three sections. From 1,495 to 1,500 feet, limestone--two types, mostly pellets and/or intraclasts in an aphanitic to very fine grained matrix; some trilobite and pelmatozoan debris in a fine-grained matrix; radial calcite overgrowth around a few of the pellets and/or intraclasts; a few authigenic feldspar rhombs; narrow calcite veins offset along a stylolite with some limonitic clay along it, some terminate against it. From 1,505 to 1,510 feet, limestone--mottled, a small amount of irregularly distributed trilobitic and pelmatozoan debris, and very small, straight spicules(?) in an aphanitic to microgranular matrix; a few authigenic feldspar rhombs; narrow			

Description	Thickness in feet: Interval	Cumulative	Feet above base
calcite veins common. From 1,510 to 1,515 feet, limestone--mottled, pellets, intraclasts, trilobite and pelmatozoan debris, and dolomite mostly in an aphanitic matrix; intraclasts aphanitic, limonitic, slightly silty; silt scarce, mostly quartz and feldspar, rhombs common; dolomite 0.05 to 0.3 mm, some rhombs with central cloudy zones, some peripheral limonite stain, some limonitic clay and limonite along a stylolite.			
Ophileta, Lytospira, and Gasconadia common on bedding surfaces; at about 1,502 feet (locality 86T-16-9C), trilobites; at about 1,493 feet (collection TF75), trilobites; at about 1,508 feet(collection TF76) calcareous brachiopods and trilobites; and at about 1,520 feet (collection TF76a), silicified brachiopods.			
10. Limestone--aphanitic- and fine-grained; very light olive gray, weathers white; slightly silty, some very fine sand; from 1,484 to 1,487 feet, a dolomitized network of trails and burrows; dolomite fine-grained, yellowish-gray to grayish orange-pink; from 1,487 to 1,489 feet, nodular, wavy bedded, beds 2 to 4 inches; from 1,489 to 1,492 feet, nodular and shaly, much small pebble and granule intraformational conglomerate, intraclasts aphanitic, angular, matrix fine-grained.	8	256	1,484-1,492
One thin section from 1,485 to 1,490 feet. Limestone--dolomite, fossils (possibly algae) with very finely radiate structure, a few pellets and some silt in a fine to very fine grained matrix of secondarily enlarged pelmatozoan debris; silt mostly feldspar, a few rhombs, some			

Description	Thickness in feet: Interval	Cumulative	Feet above base
quartz; glauconite very scarce; abundant dolomite, 0.05 to 0.25 mm, mostly replaces pelmatozoan debris and matrix and some algae(?), fairly uniformly distributed, some peripheral limonitic stain.			
Trilobites at 1,488 feet.			
11. Limestone--aphanitic, light-gray with a pinkish cast, beds 6 to 12 inches, ledge forming.	2	258	1,482-1,484
12. Limestone--aphanitic- to fine-grained; light-gray to very light olive gray, weathers white; silty, silt mostly feldspar as authigenic overgrowths around detrital grains, quartz common; in upper part network dolomite, fine-grained, grayish orange-pink to grayish-orange; small pebble and granule intraformational conglomerate common, intraclasts aphanitic, angular, matrix fine-grained; nodular, thin-bedded, beds up to 3 inches.	6	264	1,476-1,482
One thin section from 1,475 to 1,480 feet. Limestone--intraclasts, pellets, and pelmatozoan and trilobite debris in an aphanitic to microgranular matrix; intraclasts granule size and smaller, mostly aphanitic, silt and limonite specks common; silt mostly feldspar rhombs; glauconite very scarce.			
Gastropods on bedding surfaces; trilobite fragments in intraformational conglomerate.			
13. Limestone--mostly aphanitic, some fine-grained; yellowish-gray to very light olive gray in part with an orange cast; glauconite scarce; silty, some very fine sand, a few fine to medium grains; a few shale films; some dolomite mottles, fine-grained,	5	269	1,471-1,476

Description	Thickness in feet: Interval	Cumulative	Feet above base
grayish orange-pink to grayish-orange; wavy bedding, beds up to 1 foot. Ophileta, Gasconadia, and Lytospira on bedding surfaces.			
14. Limestone--aphanitic- to fine-grained; yellowish-gray to very light olive gray, weathers white; much glauconite in lower part, some in upper part; silty, some very fine sand, a few fine to medium grains, sand and silt mostly feldspar as clear rhombs and authigenic overgrowths around detrital grains, quartz common especially in coarser grained part; thin shale films common; a few dolomite mottles, fine-grained, grayish orange-pink to grayish-orange; very small pebble to granule intraformational conglomerate common, intraclasts aphanitic, angular, matrix fine-grained; nodular- to thin-bedded, a few beds up to 3 inches. One thin section from 1,465 to 1,470 feet. Limestone--intraclasts, ooids, some pelmatozoan debris, and a few pellets in a very fine grained matrix; one pebble contains indistinct intraclasts, ooids, a few pellets, and fossil fragments in an aphanitic matrix, rest of intraclasts mostly less than 0.5 mm, aphanitic; ooids 0.05 to 0.3 mm, radial structure, aphanitic centers; tiny feldspar rhombs very scarce; limonitic clay along a stylolite. Ophileta and Lytospira on bedding surfaces; trilobites at 1,464 feet.	11	280	1,460-1,471

Description	Thickness in feet: Interval	Cumulative	Feet above base
Miller's Segment from Base of Mormon Creek Segment Downstream			
This segment was described by James F. Miller during June 1976. The top surface of the top bed of this segment bears the number 1460 in yellow paint, also the number 115 in red paint. Continue down in section along west bank of Threadgill Creek. Trilobites in the Miller segment were identified by James Stitt.			
Wilberns Formation: 115 feet measured San Saba Member: 115 feet measured Calcitic facies: 115 feet measured			
1. Limestone--aphanitic, light tan.	0.3	0.3	114.7-115
2. Limestone--pebbly grainstone.	1.7	2.0	113-114.7
3. Limestone--aphanitic, brown-tan, burrowed, 3-inch beds. Fossils collected by Miller from 105 feet, *Symphysurina bulbosa*.	9.0	11.0	104-113
4. Limestone--glauconitic, oolitic grainstone.	1.0	12.0	103-104
5. Limestone--aphanitic, brown-tan, burrowed, 3-inch beds.	1.0	13.0	102-103
6. Limestone--glauconitic, oolitic grainstone. Fossils collected by Miller from 102 feet, *Symphysurina brevispicata* and *S. bulbosa*. Fossils collected from 102 and 105 are definitely *S. bulbosa* Subzone of Stitt.	1.5	14.5	100.5-102
7. Limestone--aphanitic, tan.	1.5	16.0	99-100.5
8. Limestone--top foot, light tan, slightly glauconitic, oolitic? grainstone with trilobites; followed down by 6 inches of glauconitic, limestone pebble conglomerate; 2 inches of green, glauconitic oolite; and 5 inches of	1.5	17.5	97.5-99

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	glauconitic, limestone pebble conglomerate = 2.1 feet??			
	Fossils collected by Miller from 99 feet, *Jujuyaspis keideli* and ?*Symphysurina bulbosa*. This collection is probably the base of the *S. bulbosa* Subzone.			
9.	Limestone--mostly aphanitic, some granular, tan-brown, burrowed, wavy bedded, beds 2-3 inches. Glauconitic, pebbly oolite at 95 and 97 feet. A thin bed of light tan-buff, limestone pebble conglomerate at 90.5 feet may be trilobitic.	7.5	25.0	90-97.5
	Fossils collected by Miller from 92 feet, *Symphysurina brevispicata* and *Jujuyaspis keideli*. This collection is *Symphysurina brevispicata* Subzone; the *J. keideli* provides a critical correlation to the Lower Tremadoc of Norway.			
10.	Limestone--mostly aphanitic, tan-brown, beds 2-3 inches, some pebbly. A bed of light tan-buff, limestone pebble conglomerate at 89.75 feet may be trilobitic.	3.0	28.0	87-90
11.	Limestone--aphanitic, buff, beds 1 inch.	2.0	30.0	85-87
12.	Limestone--tan-brown, glauconitic grainstone. Three-inch limestone pebble conglomerate at 84 feet.	2.0	32.0	83-85
13.	Limestone--aphanitic and wackestone, light tan, a few small pellets and gastropods at 81 feet.	4.0	36.0	79-83
14.	Limestone--brown-tan, pebble conglomerate.	0.75	36.75	78.25-79
15.	Limestone--brown-tan, glauconitic.	0.25	37.0	78-78.25

Description	Thickness in feet: Interval	Cumulative	Feet above base
SHIFT across Threadgill Creek using above bed and continue down in section along east side of creek. A juniper grows on this bed on the east side of Treadgill Creek.			
16. Limestone--flat pebble conglomerate with clasts one-eighth to one-fourth inch thick and up to 1.25 inches long.	1.0	38.0	78-79
17. Limestone--aphanitic, light gray, finely laminated, beds 1-2 inches, some limestone pebble conglomerate at 75 feet and elsewhere.	6.0	44.0	71-77
18. Limestone--mostly tan-buff, pebble conglomerate, clasts 0.25 to 1 inch in aphanitic matrix with pellets and minor glauconite; some flat pebble conglomerate, notably at 70 feet; some pelletal grainstone. Gastropods abundant in some beds.	10.0	54.0	61-71
This is the base of the 63 feet of missing section; the 52 feet of section below this is used to tie the Miller segment to the Upstream Threadgill Creek segment 0.75 miles to the northeast.			
19. Limestone--tan, oolitic, pelletal grainstone, beds 1-3 inches, forms prominent cliff.	5.5	59.5	55.5-61
20. Limestone--brown, oolitic grainstone.	1.5	61.0	54-55.5
SHIFT across small fault using this distinctive bed.			
21. Limestone--aphanitic, buff and tan to gray, minor brown, fine grained, pelleted packstone.	6.0	67.0	48-54

Description	Thickness in feet: Interval	Cumulative	Feet above base
22. Limestone--granular, gray-tan, pebbly, glauconitic packstone, megaripples at 34.5 feet; forms ledges along line of section, lower 13 feet forms massive vertical cliff downstream.	17.0	84.0	31-48
23. Limestone--light gray, recessive, micropelleted packstone, some light brown-tan, pebbly, granular, glauconitic packstone, 1-3 inch wavy beds.	11.0	95.0	20-31
24. Limestone--tan-buff, coarse, pebbly, pelleted packstone, essentially one bed, forms prominent bench.	3.0	98.0	17-20
25. Limestone--tan-buff, oolitic packstone, forms massive ledge.	2.25	100.25	14.75-17
Possibly equivalent to algal biostrome in Upstream Threadgill Creek Segment.			
26. Limestone--recessive, gray-tan, pebbly, grainstone, beds mostly 1-3 inches. A 3-inch aphanitic bed 4 inches above base has bird's-eye structure, probably indicating a supertidal environment.	1.75	102.0	13-14.75
Trilobites from 13.4 feet probably belong to the *Corbinia apopsis* Subzone.			
27. Limestone--tan-buff, oolitic, pebbly packstone. Ripple marks 3-5 inches high with wave length of 3 feet at 12 and 13 feet.	2.0	104.0	11-13
28. Limestone--aphanitic, recessive, 1 inch beds.	0.75	104.75	10.25-11
29. Limestone--tan, very glauconitic, pebbly, oolitic grainstone in upper 3 inches, followed downward by 3 feet of oolitic packstone, and 4.5 feet of aphanitic limestone; forms cliff or high ledge.	7.75	112.5	2.5-10.25
Eurekia free cheek at 4 feet.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
30. Limestone--tan, fine-grained wackestone and packstone, forms a slope.	2.5	115.0	0-2.5

Trilobites at 2 feet identified by James Stitt are diagnostic of Saukiella serotina Subzone of Saukia Zone.

Based on preliminary lithologic correlation with the upstream Threadgill Creek segment, the Saukiella serotina Subzone in Miller's section probably extends from the bottom of his section to 4.5 feet, the Corbinia apopsis Subzone from 4.5 to 13.4 feet, the Missisquoia Zone from 15 to 20 feet, and the remainder of this segment is Symphysurina Zone if Stitt's revised base of the zone (lowest Symphysurina brevispicata or Highgatella cordilleri) is followed. The interval from 20 feet to 99 feet is S. brevispicata Subzone, and strata above 99 feet represent the S. bulbosa Subzone of Stitt (1977).*

Additional thick-bedded, massive, ledge-forming limestone strata of light gray, pebbly, very pelleted packstone and grainstone are exposed below Miller's segment to the Lange's Mill crossing. The Saukiella serotina Subzone is present in this interval. The subzone is about 45 feet thick, based on conodont data. The upper Saukiella junia Subzone is present to the Lange's Mill crossing.

SHIFT northeastward 0.75 mile to north side of dim road at a point 400 feet east of a northward-flowing drain and 600 feet southeast of its juncture with Threadgill Creek; continue down in section northwestward to drain, along east bank of drain to Threadgill Creek, then along the east bank of Threadgill Creek to base of segment.

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*James Stitt (1977)

Description	Thickness in feet: Interval	Cumulative	Feet above base
Upstream Threadgill Creek Segment			
Moore Hollow Group: 1,460 feet thick Wilberns Formation: 600 feet thick San Saba Member: 281 feet thick Calcitic facies: 281 feet thick			
As painted intervals from 1,335 to 1,460 feet are not all 5 feet, footages are as follows: 1,453 to 1,460 — 1,385 to 1,390 1,446 to 1,453 — 1,379 to 1,385 1,439 to 1,446 — 1,374 to 1,379 1,432 to 1,439 — 1,368 to 1,374 1,426 to 1,432 — 1,363 to 1,368 1,420 to 1,426 — 1,357 to 1,363 1,414 to 1,420 — 1,352 to 1,357 1,408 to 1,414 — 1,346 to 1,352 1,402 to 1,408 — 1,341 to 1,346 1,396 to 1,402 — 1,335 to 1,341 1,390 to 1,396			
15. Limestone--mostly very fine to coarse grained, some aphanitic from 1,408 to 1,414 feet; mostly light olive-gray and yellowish-gray, in lower 10 feet pale yellowish-brown, and light gray to pale olive, speckled and mottled throughout by dark yellowish-orange and grayish-orange, some pale reddish-brown from 1,426 to 1,432 feet; slightly to fairly glauconitic; a few medium to coarse, quartz sand grains below 1,426 feet, silt and very fine sand throughout, most common from 1,432 to 1,439, 1,396 to 1,402 and 1,385 to 1,390 feet, mostly feldspar both authigenic and detrital, some quartz; oolitic beds common throughout, ooids in part replaced by dolomite, some of pisolite size; intraformational conglomerate beds common, intraclasts aphanitic; beds mostly 6 inches or less.	75	355	1,385-1,460

Description	Thickness in feet: Interval	Cumulative	Feet above base
Thin sectioned from 1,390 to 1,396, 1,402 to 1,408, 1,414 to 1,420, 1,426 to 1,432, 1,439 to 1,446, and 1,453 to 1,460 feet, six sections. From 1,390 to 1,396 feet, limestone--mottled, some trilobite and pelmatozoan debris, a few finely radiate fossils and silt grains and numerous pellets in an aphanitic- to fine-grained matrix; finely radiate fossils indistinct, radial calcite around cloudy centers, peripheries irregular; silt in part authigenic rhombs of feldspar; glauconite very scarce, very tiny grains; dolomite, 0.15 to 0.3 mm, very scarce, confined to one small area of aphanitic matrix; stylolites common, brown clay and silt along them. From 1,402 to 1,408 feet, limestone--numerous ooids and a few large intraclasts and trilobite and pelmatozoan fragments, algae scarce, mostly in a microgranular to fine-grained calcite matrix, a very small amount of aphanitic matrix contains authigenic feldspar rhombs; ooids 0.05 to 0.75 mm, mostly radial calcite with much calcite dust, concentric structure faint to distinct, centers range from cloudy aphanitic, to very fine grained mosaics, to individual rounded pelmatozoan(?) fragments, some fossil debris; intraclasts microgranular to aphanitic, very oolitic; dolomite rhombs 0.1 to 0.3 mm, replace ooids and matrix, in turn replaced by calcite mosaic. From 1,414 to 1,420 feet, limestone--two types, mostly composed of trilobite debris and a few pellets included in authigenic calcite added to pelmatozoan debris, in part much trilobite debris and numerous pellets in a cloudy aphanitic matrix; silt			

Description	Thickness in feet: Interval	Cumulative	Feet above base
very scarce, mostly feldspar rhombs in aphanitic part, a few in filled fossils; glauconite very scarce. From 1,426 to 1,432 feet limestone--two types, in part intraclasts, gastropods, and abundant authigenically enlarged pelmatozoan debris in part replaced by dolomite in a very small amount of microgranular matrix, in part pelmatozoan debris and a few calcareous brachiopod fragments in an aphanitic matrix; intraclasts microgranular in part replaced by dolomite; silt-size rhombs of authigenic feldspar scarce in intraclasts and along stylolites; glauconite very scarce, mostly along peripheries of intraclast-like objects probably formed from gastropod fillings; dolomite 0.05 to 0.15 mm, in part weathered to calcite and admixed limonite, some interstitial clay; stylolites common. From 1,439 to 1,446 feet, limestone--numerous ooids, a few gastropod fillings resembling intraclasts and some pelmatozoan debris in an aphanitic to very fine-grained matrix; gastropod filings aphanitic, some trilobite and pelmatozoan debris, a few tiny rhombs of feldspar, mostly coated by glauconite; ooids mostly radial, centered on trilobite and pelmatozoan fragments and intraclasts containing rhombs of feldspar, a few coated by a very thin film of clay; some limonite, limonitic clay, and authigenic feldspar along a stylolite. From 1,453 to 1,460 feet, limestone--pellets, indistinct fossil debris, intraclasts and dolomite in a microgranular matrix; intraclasts aphanitic, in part replaced by dolomite; dolomite 0.03 to 0.15 mm, a 0.25-inch patch may occupy a burrow, some interstitial clay.			

Discription	Thickness in feet Interval	Cumulative	Feet above base
Fossils collected by Nicholls from 1,387 feet, orthid brachiopod; from 1,387.5 feet, Bayfieldia simata Winston and Nicholls, Saukiella serotina Longacre, and Macronoda prima Lochman; from 1,388 feet, Bayfieldia simata Winston & Nicholls, Saukiella serotina Longacre, Euptychaspis kirki Kobayashi, Macronoda prima Lochman, Calvinella prethoparia Longacre, and Briscoia llanoensis Winston and Nicholls; from 1,391.5 feet, Briscoia llanoensis Winston and Nicholls, Eurekia eos (Hall), Bayfieldia simata Winston and Nicholls, and Euptychaspis kirki Kobayashi, from 1,392 feet, Briscoia llanoensis Winston and Nicholls, Bayfieldia simata Winston and Nicholls, Bowmania sagitta Winston and Nicholls, Euptychaspis kirki Kobayashi, Eurekia eos (Hall), Idiomesus levisensis (Rasetti), Macronoda prima Lochman, Heterocaryon tuberculatum? Rasetti, Saukiella serotina Longacre, and Stenopilus latus Ulrich; from 1,393 feet, Bayfieldia simata Winston and Nicholls and Eurekia eos (Hall); from 1,394 feet, Briscoia llanoensis Winston and Nicholls, Idiomesus levisensis (Rasetti) Bayfieldia simata Winston and Nicholls, Eurekia eos (Hall), and conchostracon; from 1,395 feet, Euptychaspis kirki Kobayashi, Euptychaspis jugalis Winston and Nicholls, Briscoia llanoensis Winston and Nicholls, Bayfieldia simata Winston and Nicholls, Eurekia eos (Hall), Owenella sp., and Hyolithes sp.; from 1,400 feet, Bayfieldia simata Winston and Nicholls, Briscoia llanoensis Winston and Nicholls Calvinella prethoparia Longacre, Euptychaspis kirki Kobayashi, Idiomesus levisensis (Rasetti), Keithiella patula Winston and Nicholls, Macronoda prima Lochman, Plethometopus obtusus Rasetti, Saukiella serotina Longacre, Saukiella planata Winston and Nicholls, Stenopilus latus Ulrich, Bowmania sagitta Winston and Nicholls, and Heterocaryon tuberculatum Rasetti; from 1,402 feet, Leiobienvillia leonensis Winston and Nicholls, Corbinia apopsis Winston and Nicholls, Schizopea sp., and Acheilops masonensis Winston and			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Nicholls; from 1,405 feet, Acheilops masonensis Winston and Nicholls and Schizopea sp.; from 1,409 feet, Corbinia apopsis Winston and Nicholls, Acheilops masonensis Winston and Nicholls, and fucoids; from 1,411 feet, undet. brachiopod; from 1,412 feet, Finkelnburgia sp., and Nanorthis hamburgensis (Walcott); from 1,412.5 feet, undet. brachiopods and gastropod; from 1,414 feet, undet. brachiopod and Sinuopea? sp.; from 1,415 feet, Missisquoia typicalis Shaw and Missisquoia nasuta Winston and Nicholls; from 1,416 and 1,417 feet, Missisquoia typicalis Shaw; from 1,418 feet, Missisquoia nasuta Winston and Nicholls, undet. brachiopods, and gastropods; from 1,421 feet, Missisquoia typicalis Shaw, Missisquoia nasuta Winston and Nicholls, Highgatella sp., orthid brachiopod, and undet. trilobite; from 1,423 feet, Missisquoia? sp., orthid brachiopod, and gastropod; from 1,425 feet, Missisquoia typicalis Shaw, Highgatella sp., Apheoorthis ornata Ulrich and Cooper, and Pseudohystricurus sp.; from 1,426 feet, Missisquoia nasuta? Winston and Nicholls, and Apheoorthis; from 1,449 feet, Hystricurus sp., Symphysurina sp., and Jujuyaspis sp.; from 1,451 feet, Lytospira? sp., and gastropods; from 1,458 feet, Symphysurina sp. Fossils collected by Dixon from 1,420-1,426 feet, Apheoorthis ornata Ulrich and Cooper. Locality 86T-16-9F is at about 1,410 feet, 86T-16-9B at about 1,445 feet, and 86T-16-9D from about 1,459 to 1,460 feet. Collection TF74 was made at about 1,450 feet and TF74a at about 1,445 feet.			
16.	Limestone--mostly coarse-grained, some fine and very fine grained in upper part; mostly pale yellowish-brown, some light olive-gray in upper part, speckled and mottled by yellowish-orange and grayish-orange; glauconite common to abundant; sand a few grains in lower half, fine to	42	397	1,343-1,385

Description	Thickness in feet: Interval	Cumulative	Feet above base
coarse, silt common to scarce, grades to very fine sand, mostly feldspar, both detrital and authigenic, some quartz; mica scarce; mostly oolitic; some mudball-like objects; intraclasts common; numerous beds fossiliferous; beds mostly 6 to 12 inches, some thin, silty beds near middle.			
Thin sectioned from 1,346 to 1,352, 1,357 to 1,363, 1,368 to 1,374, and 1,379 to 1,385 feet, four sections. From 1,346 to 1,352 feet, limestone--trilobite, pelmatozoan, and gastropod debris, intraclasts (?), and dolomite in fine-grained, clear calcite mosaic; intraclasts mostly replaced by dolomite; glauconite peripheral to intraclasts (?), surrounds and invades pelmatozoan debris; dolomite 0.05 to 0.15 mm, mostly fresh, some replaced by calcite and admixed limonite, replaces intraclasts, pelmatozoan debris, and to a lesser extent trilobite debris; gastropod shell material represented by a mosaic of tiny calcite grains. From 1,357 to 1,363 feet, limestone--trilobite and pelmatozoan debris, intraclasts, and dolomite in a microgranular to fine-grained, clear calcite matrix; authigenic feldspar rhombs very scarce in intraclasts; dolomite, 0.05 to 0.25 mm, replaces intraclasts and aphanitic limestone in fossil fillings. From 1,368 to 1,374 feet, limestone--two types, in part trilobite debris, a few ooids, and some pelmatozoan fragments in an aphanitic matrix, in part similar fossil debris, pellets, a few ooids, and much dolomite in a microgranular to very fine-grained, clear calcite matrix; radial ooids, fossil fragments at center; authigenic feldspar rhombs common in aphanitic part; dolomite about 0.1 mm, mostly replaced by calcite and admixed limonite; numerous			

Description	Thickness in feet: Interval	Cumulative	Feet above base
limonite specks, a few appear to be cubes; limonitic clay along stylolites. From 1,379 to 1,385 feet, limestone--numerous ooids and pellets or intraclasts, some trilobite and pelmatozoan debris, and a little dolomite in a microgranular, clear calcite matrix; radial ooids, centers of various types from aphanitic pellets(?) to individual calcite grains and fossil fragments, a few partly replaced by dolomite, several with radial limonitic material; dolomite, 0.15 to 0.25 mm. Fossils collected by Dixon from 1,346 to 1,352 feet, Euptychaspis jugalis Winston and Nicholls, Eurekia? sp., Owenella sp., and orthid brachiopod; from 1,352 to 1,357 feet, orthid brachiopod, and Eurekia eos (Hall); from 1,357 to 1,363 feet, Owenella sp., Apheoorthis sp., Eurekia eos (Hall), Bayfieldia simata Winston and Nicholls, and Calvinella procera Winston and Nicholls; from 1,368 to 1,374 feet, Bayfieldia simata Winston and Nicholls, Euptychaspis kirki Kobayashi, Eurekia eos (Hall), and Calvinella procera Winston and Nicholls; from 1,379 to 1,385 feet (lower part), Idiomesus levisensis (Rasetti), Saukiella serotina Longacre, Eurekia eos (Hall), Euptychaspis kirki Kobayashi, and Bayfieldia simata Winston and Nicholls; from 1,379 to 1,385 feet (upper part), Euptychaspis kirki Kobayashi, eurekid, Bayfieldia simata Winston and Nicholls, Stenopilus latus Ulrich, Briscoia llanoensis Winston and Nicholls, and Idiomesus levisensis (Rasetti).			
17. Limestone--mostly coarse-grained, some medium-grained; light olive-gray to pale yellowish-brown, speckled and mottled moderate yellowish-brown, grayish-orange, dark yellowish-orange, where glauconitic greenish-	23	420	1,320-1,343

Description	Thickness in feet: Interval	Cumulative	Feet above base
gray, glauconite abundant; sand, a few grains, mostly fine, some medium, in upper and lower samples; slightly silty; ooids common in lower and upper intervals, upper foot an oolite bed; intraclasts and fossils abundant; mostly thick-bedded, beds up to 3 feet, some thin-bedded, recessive intervals.			
Thin sectioned from 1,325 to 1,330 and 1,335 to 1,341 feet, two sections. From 1,325 to 1,330 feet, limestone--much glauconite and authigenically enlarged pelmatozoan debris, some trilobite debris and dolomite in a microgranular, clear calcite matrix; glauconite rounded to angular, much admixed calcite, in part replaced by dolomite, some limonitic alteration; dolomite, 0.1 to 0.4 mm, exceptionally fresh, a little limonitic stain about a few grains, mostly replaces matrix; limonite common in some fossils. From 1,335 to 1,341 feet, limestone --abundant trilobite and pelmatozoan debris, some dolomite and glauconite in a secondarily enlarged pelmatozoan matrix, much calcite radial to fossil debris; glauconite somewhat diffuse, fills pores and replaces fossil debris, especially pelmatozoan fragments around which are films of "ordered" glauconite; dolomite, 0.05 to 0.25 mm, mostly in fossil fillings (Pl. 18, fig. 2), replaces trilobite debris slightly and perhaps occupies burrows, much interstitial limonitic clay.			
Fossils collected by Dixon from 1,320-1,325 feet, Saukia tumida Ulrich and Resser and Stenopilus latus Ulrich; from 1,330-1,335 feet, Stenopilus latus Ulrich, and orthid brachiopods; from 1,335-1,340 feet,			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Saukiella junia (Walcott), var. B Winston and Nicholls; from 1,341 to 1,346 (lower?) feet, Briscoia hartti? (Walcott), Saukiella junia (Walcott), var. A Winston and Nicholls, and Idiomesus sp.; from 1,341 to 1,346 (upper?) feet, Euptychaspis jugalis Winston and Nicholls, Saukiella junia (Walcott), var. A Winston and Nicholls, and Stenopilus latus Ulrich. Locality 86T-16-9H is in the interval 1,341 to 1,343 feet.			
18.	Limestone--fine to coarse grained; light olive-gray, greenish-gray, brownish-gray, and yellowish-gray, in part speckled by light to dark yellowish-orange; darker portions from 1,308 to 1,310, 1,311 to 1,312, and 1,314 to 1,320 feet, very glauconitic, recessive; some sand in lower part, fine to medium; silt aggregates common; large ooids (pisolites) abundant in lower part; some intraclasts. Thin sectioned from 1,305 to 1,310 and 1,315 to 1,320 feet, two sections. From 1,305 to 1,310 feet, limestone--abundant dolomite, numerous Salterella(?) (Pl. 18, fig. 1) and secondarily enlarged pelmatozoan debris, some trilobite and brachiopod debris and a few glauconite grains in a microgranular to fine grained, clear calcite matrix; the Salterella(?) superficially resemble ooids, are composed of alternating roughly concentric layers of shell recrystallized to a calcite mosaic and layers of aphanitic to microgranular calcite, most are partly replaced by dolomite especially in central part (Pl. 18, fig. 1), dolomite may replace either type layer, or both, much interstitial clay and some glauconite in a few Salterella(?); dolomite 0.05 to 0.15 mm, replaces pelmatozoan and trilobite debris,	12	432	1,308-1,320

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	where replacing matrix somewhat finer grained, hypidiomorphic. From 1,315 to 1,320 feet, limestone--much pelmatozoan debris and glauconite, a little dolomite, silt and sand, and a few trilobite fragments in a fine-grained, clear calcite matrix of secondarily enlarged pelmatozoan debris; silt and very fine sand mostly feldspar, in part weathered detrital, in part with authigenic overgrowth, a few clear rhombs, a few black opaque minerals; glauconite up to 0.25 mm, rounded to angular and fragmental, in part with admixed calcite, thin peripheral films of "ordered" glauconite about some grains; dolomite, about 0.15 mm, mostly replaces pelmatozoan debris and matrix, a few irregular patches may occupy burrows. Fossils collected by Dixon from 1,310 to 1,315 and 1,315 to 1,320 feet, Saukiella junia (Walcott), var. B Winston and Nicholls.			
19.	Limestone--coarse grained; light yellowish-gray to light olive-gray, some greenish-gray and moderate brown in lower part, speckled by dark yellowish-orange; mottles common; very glauconitic; sand mostly very fine to fine, a few grains medium to coarse, silt common to scarce, silt and sand mostly feldspar, mostly detrital, some authigenic, quartz common; pisolites numerous in bottom bed, ooids abundant in upper part; numerous intraclasts; beds 4 to 24 inches. Thin sectioned from 1,290 to 1,295 and 1,300 to 1,305 feet, two sections. From 1,290 to 1,295 feet, limestone--glauconite, trilobite debris with much radial calcite, much secondarily enlarged pelmatozoan	21	453	1,287-1,308

Description	Thickness in feet: Interval	Cumulative	Feet above base
debris, a few calcareous brachiopod fragments, and much dolomite in a very small amount of very fine-grained, clear calcite; glauconite, about 0.25 mm, elliptical to irregular grains, somewhat admixed with calcite and altered; dolomite 0.1 to 0.15 mm, common in fossil fillings, mostly replaced by calcite and admixed limonite, in adjacent matrix mostly 0.25 to 0.5 mm, fresh, only slightly cloudy. From 1,300 to 1,305 feet limestone--much trilobite debris with a little radial calcite, secondarily enlarged pelmatozoan debris, a few intraclasts, and some dolomite in a very fine-grained, clear calcite matrix; intraclasts aphanitic, silty, glauconitic, dolomitic, may be fossil fillings; silt mostly authigenic feldspar rhombs; glauconite mostly altered; dolomite 0.05 to 0.25 mm, mostly in fossils, replaces trilobite and pelmatozoan debris, one irregular patch with much interstitial limonitic clay.			
Fossils collected by Ellinwood from 1,290 feet, *Corbinia implumis* Winston and Nicholls and *Bayfieldia binodosa* (Hall); from 1,291 feet, *Bayfieldia binodosa* (Hall), *Dikelocephalus* sp., *Owenella* sp., *Saukiella pepinensis* (Owen), *Billingsella corrugata inornata* Ellinwood, and *Eurekia granulosa* Walcott; from 1,293 feet, *Saukiella pepinensis* (Owen); from 1,295 feet, *Apheoorthis* sp.; from 1,301 feet, *Euptychaspis typicalis* Ulrich, *Bayfieldia binodosa* (Hall), *Saukiella junia* (Walcott), var. B Winston and Nicholls, and *Owenella* sp.; from 1,303 feet, *Owenella* sp., *Saukiella junia* (Walcott) var. B. Winston and Nicholls, *Euptychaspis jugalis* Winston and Nicholls, and			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	eurekiid free cheek; from 1,305 feet, Saukiella junia (Walcott), var. B Winston and Nicholls, Bayfieldia binodosa (Hall) and Owenella sp. Fossils collected by Dixon from 1,305-1,310 feet, Owenella sp., Saukia tumida Ulrich and Resser, Saukiella junia (Walcott), var. B Winston and Nicholls, Bayfieldia binodosa (Hall), Euptychaspis typicalis Ulrich, and ?Idiomesus sp.			
20.	Limestone and dolomite--limestone medium-grained, yellowish-gray, glauconitic; some very fine sand, silt common; dolomite an anastomosing pattern in direction of beds, dark yellowish-orange, weathers in relief; beds up to 2 feet, bedding characteristics change at base of interval with very few wavy shale films above this level. One thin section from 1,280 to 1,285 feet. Limestone--pellets, dolomite, finely comminuted pelmatozoan and phosphatic brachiopod debris, silt, and a few glauconite grains in a fine-grained, fairly clear calcite mosaic possibly from secondary enlargement of pelmatozoan debris; silt angular, quartz and feldspar, the latter in part weathered, detrital, in part with authigenic overgrowth; dolomite 0.05 to 0.1 mm, mostly irregularly distributed in thin beds, some interstitial limonitic clay. Fossils collected by Ellinwood from 1,286 feet, Bayfieldia binodosa (Hall), Saukiella pyrene (Walcott), Keithiella patula Winston and Nicholls, and Owenella sp.; from 1,287 feet, Bayfieldia binodosa (Hall)	5	458	1,282-1,287

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Eurekia granulosa Walcott, and *Saukiella pyrene* (Walcott).			
21.	Limestone--aphanitic- to coarse-grained, the latter mostly in upper 10 and lower 5 feet, in part aphanitic from 1,235 to 1,240 feet, rest mostly very fine and fine grained, some microgranular from 1,235 to 1,245 and 1,255 to 1,265 feet; very light olive gray in upper part, yellowish-gray in lower 10 feet, from 1,240 to 1,260 feet, argillaceous, a very light pinkish gray, very pale yellowish brown, and pale-olive, in upper part speckled grayish-orange; mottled, very fine sand and silt abundant above 1,260 feet, a few medium to coarse sand grains from 1,240 to 1,245 feet and in lower interval, silt and sand mostly feldspar, mostly cloudy and probably detrital, much authigenic overgrowth, numerour clear rhombs, quartz scarce in upper part, proportionally more abundant in lower part, larger grains mostly upper part, larger grains mostly quartz; stromatolites from 1,259 to 1,261 feet in line of section are not present updip; massive appearing in fresh exposures, elsewhere nodular from wavy shale films, a few beds up to 6 inches. Thin sectioned from 1,235 to 1,240. 1,245 to 1,250, 1,255 to 1,260, 1,260 to 1,265 and 1,270 to 1,275 feet, five sections. From 1,235 to 1,240 feet, limestone--two types, mostly abundant pellets and trilobite debris and some pelmatozoan fragments in a micro-granular, fairly clear calcite matrix, some irregular aphanitic patches contain trilobite debris; a few phosphatic brachiopod fragments; glauconite very scarce; limonitic clay and a few silt-size authigenic feldspar rhombs along a	51	509	1,231-1,282

Description	Thickness in feet: Interval	Cumulative	Feet above base
stylolite. From 1,245 to 1,250 feet, limestone--numerous pellets and finely radiate fossils, some dolomite, pelmatozoan fragments and a few feldspar silt rhombs in an aphanitic to microgranular matrix; finely radiate fossils, 0.1 to 0.4 mm in diameter, very faint concentric structure, dolomite 0.05 to 0.2 mm, exceptionally fresh, idiomorphic; pyrite common, mostly altered to limonite; two elliptical areas of medium-grained, clear mosaic calcite appear to fill cavities. From 1,255 to 1,260 feet, limestone--abundant pellets, a few pelmatozoan and trilobite fragments, some finely radiate fossils, silt, and some dolomite mostly in an aphanitic matrix; finely radiate, fossils 0.1 to 0.15 mm in diameter; silt scarce, both detrital and authigenic feldspar; dolomite 0.05 to 0.2 mm, some peripheral limonitic stain, a few calcite inclusions. From 1,260 to 1,265 feet, limestone --silty, densely aphanitic to microgranular as mottles and wavy layers (stromatolitic structure) (Pl. 17, fig. 6); minute pellets very abundant, except in most densely aphanitic part; trilobite fragments scarce; silt mostly rhombs of authigenic feldspar; glauconite very scarce. From 1,270 to 1,275 feet, limestone--very abundant pellets, some silt, a few glauconite grains and trilobite and pelmatozoan fragments in a microgranular matrix; silt mostly authigenic feldspar, many rhombs; glauconite about 0.05 mm, elliptical to angular grains; calcite vein, medium-grained mosaic.			
Fossils collected by Ellinwood from 1,233 feet, *Monocheilus truncatus* Ellinwood,			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Apatokephaloids sp., and Rasettia magna Ellinwood; from 1,237 feet, Monocheilus cf. M. truncatus Ellinwood, Euptychaspis frontalis Longacre, Keithiella scapane Longacre, and Bayfieldia binodosa (Hall); from 1,238 feet, Euptychaspis frontalis Longacre; from 1,244 feet, Eurekia granulosa Walcott, and Keithiella scapane Longacre; from 1,258 feet, Rasettia magna Ellinwood; from 1,263 feet, Keithiella scapane Longacre; from 1,265 feet, Bayfieldia binodosa (Hall); from 1,268 feet, Monocheilus truncatus Ellinwood. Fossils collected by Dixon from 1,270-1,275 feet, Sinuopea sweeti (Whitfield).			
22.	Limestone--mostly fine- to very fine-grained, some medium-grained; yellowish-gray with a pinkish cast; mottled; silt scarce; resistant, forms rapids in creek with 5-foot drop. Thin sectioned from 1,255 to 1,230 feet. Limestone--very numerous pellets in a microgranular to fine-grained matrix that may be mostly secondarily enlarged pelmatozoan debris, a complete phosphatic brachiopod section, a few finely radiate fossils. Trilobites and Owenella common at 1,228 feet.	5	514	1,226-1,231
23.	Limestone--mostly fine- to very fine-grained, coarse-grained, and trilobitic from 1,196 to 1,198, 1,205 to 1,208, and 1,213 to 1,214 feet, upper interval glauconitic; yellowish-gray, in part speckled dark yellowish-orange; slightly silty in upper 10 feet, much silt in lower 10	30	544	1,196-1,226

Description	Thickness in feet: Interval	Cumulative	Feet above base
feet, silt mostly clear rhombs of authigenic feldspar, some cloudy, detrital centers, quartz scarce; argillaceous, wavy shale films common; nodular-bedded.			
Chert from 1,215 to 1,220 feet, very light olive gray, granular, quartzose, intraclastic.			
Thin sectioned from 1,195 to 1,200, 1,205 to 1,210, and 1,215 to 1,220 feet, three sections. From 1,195 to 1,200 feet, limestone--two types, mostly abundant pellets, a few trilobite fragments and intraclasts, some silt, in a fine to very fine-grained, clear calcite matrix that may be mostly secondarily enlarged pelmatozoan debris; intraclasts aphanitic; silt authigenic feldspar mostly rhombs; glauconite very scarce; one bed at edge of thin section slightly silty, aphanitic. From 1,205 to 1,210 feet, limestone--abundant pellets, a few trilobite fragments and much finely comminuted pelmatozoan debris in a fine-grained clear calcite mosaic that may be secondary enlargement of pelmatozoan debris; silt authigenic feldspar, rhombs very scarce; a hexactinellid spicule replaced by calcite, others not replaced; glauconite very scarce; narrow, linear mosaics of clear calcite replace unidentified fossil debris; dolomite very scarce, mostly represented by rhombic holes surrounded by limonitic stain. From 1,215 to 1,220 feet, limestone--numerous pellets in a microgranular to very fine-grained matrix, the latter possibly secondarily enlarged pelmatozoan debris, other fossil debris scarce, mostly replaced by a very fine-grained calcite mosaic, a few finely radiate fossils.			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Hexactinellid spicules common except from 1,215 to 1,220 feet.			
24.	Limestone--mostly fine- to very fine-grained, some coarse-grained; yellowish-gray to very light gray, mottled; slightly glauconitic; silt common to abundant; finer grained part nodular from wavy shale films, thin-bedded; coarser grained part fossiliferous, distinctly and thicker bedded.	9	553	1,187-1,196
	One thin section from 1,185 to 1,190 feet. Limestone--several types, slightly silty, aphanitic to microgranular grading to very fine-grained, very silty, very minutely and abundantly pelleted, glauconitic, micaceous, thinly bedded that in turn grades to fine-grained, silty, with abundant trilobite and pelmatozoan debris, the latter in sharp wavy contact with densely aphanitic, slightly silty, with some slightly silty clay at low point of contact; much finely comminuted fossil debris; silt mostly feldspar, in part detrital part of which is twinned, many authigenic rhombs in part with slightly weathered detrital centers; mica mostly biotite altered, bent, frayed; glauconite 0.03 mm, mostly angular grains; pellets indistinct, elongate; a hexactinellid spicule replaced by calcite in aphanitic bed (Pl. 17, fig. 5).			
	Hexactinellid spicules common, a few Owenella sp.; fossils collected by Ellinwood from 1,192 feet, gastropod; from 1,195 feet, Billingsella corrugata inornata Ellinwood.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
25. Limestone--very fine-grained to aphanitic; very light gray to yellowish gray, mottled dark yellow-orange; slightly silty; bedding wavy, essentially one bed.	8	561	1,179-1,187
Point Peak Member: 154 feet thick			
26. Limestone and siltstone--limestone mostly fine- and coarse-grained; in upper part very light gray to yellowish gray, rest light-gray, in part speckled dark yellowish-orange; from 1,170 to 1,175 feet, grayish-orange and moderate reddish-orange; glauconitic; silty; micaceous; much intraformational conglomerate. Siltstone pale-olive, very calcareous, argillaceous, micaceous, nodular to fissile. Silt mostly feldspar, authigenic as overgrowths and clear rhombs, much detrital feldspar, quartz scarce. From 1,145 to 1,165 feet, beds 4 inches and less alternating with fissile intervals; from 1,165 to 1,169 feet, beds 6 to 8 inches, some interbedded siltstone,; from 1,169 to 1,179 feet, mostly siltstone, some thin-bedded limestone. Thin sectioned from 1,145 to 1,150, 1,155 to 1,160, 1,165 to 1,170, and 1,175 to 1,180 feet, four sections. From 1,145 to 1,150 feet, limestone--gastropods, trilobites, intraclasts, and a few pelmatozoan fragments in a fine- to coarse-grained, clear calcite mosaic; one pebble-size intraclast with numerous tiny pellets, many silt-size authigenic feldspar rhombs and a few fossil fragments in an aphanitic matrix; other intraclast-like objects probably gastropod fillings, these and recognizable gastropod and trilobite spine	34	595	1,145-1,179

Description	Thickness in feet Interval	Cumulative	Feet above base
fillings contain fossil debris, authigenic feldspar rhombs, and a few glauconite grains, a few are replaced by dolomite; glauconite scarce along periphery of a few intraclasts and replaces a brachiopod shell (Pl. 17, fig. 3); dolomite 0.05 to 0.2 mm, mostly in fossil filling, replaces some matrix, partly replaced by calcite and admixed limonite. From 1,155 to 1,160 feet, limestone--intraclasts and abundant trilobite, pelmatozoan, and brachiopod debris in a microgranular and secondarily enlarged pelmatozoan debris matrix; intraclasts range from very slightly silty, aphanitic to very silty, slightly glauconitic, microgranular; silt mostly authigenic feldspar rhombs in part with detrital centers, some detrital feldspar; dolomite 0.05 to 0.3 mm, mostly in matrix, in part replaced by calcite and admixed limonite; calcareous brachiopod fragments in part replaced by chert; specks of limonitic clay along a stylolite. From 1,165 to 1,170 feet, limestone--intraclasts, pellets, and pelmatozoan and trilobite debris in microgranular and secondarily enlarged pelmatozoan debris matrix; intraclasts, aphanitic, slightly silty; silt mostly authigenic feldspar rhombs;glauconite scarce, coats intraclasts; dolomite mostly represented by a few rhombic holes and limonite stain; limonite, probably altered from pyrite and glauconite, common along margins of a few intraclasts, chert replacement of pelmatozoan debris very scarce. From 1,175 to 1,180 feet, limestone--intraclasts, abundant ooids, a few trilobite and pelmatozoan fragments and glauconite grains in a microangular to fine-grained, clear calcite matrix; intraclasts, abundant trilobite debris, detrital feldspar, authigenic feldspar rhombs			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	in part with detrital centers, a few glauconite grains in an aphanitic matrix; ooids 0.25 to 0.75 mm, sharp bordered, coarse radial structure radiating from trilobite fragments, some replacement by individuals and pairs of dolomite rhombs up to 0.3 mm in size; glauconite very scarce, "moth-eaten" appearance from admixed aphanitic limestone (Pl. 17, fig. 4); dolomite mostly weathered, limonite stained along cleavages and periphery. Hexactinellid spicules common. Fossils collected by Ellinwood from 1,145 feet, Billingsella corrugata inornata Ellinwood, Idiomesus infimus Longacre, and gastropod; from 1,146 feet, Billingsella corrugata inornata Ellinwood; from 1,174 feet, Billingsella rhomba Ellinwood.			
27.	Limestone--coarse-grained, light olive-gray mottled light brown; slightly glauconitic; some very fine sand, silt abundant, silt and sand mostly feldspar as clear rhombs and authigenic overgrowths around detrital grains, quartz scarce; mica common, mostly hydrobiotite; oolitic; top bed 2 feet, rest 4 to 12 inches, some interbedded shale. Fossils collected by Ellinwood from 1,142 feet, Prosaukia cf. P. curvicostata Ulrich and Resser, Idiomesus infimus Longacre, Billingsella corrugata inornata Ellinwood, Hyolithes sp., gastropods, and problematica.	7	602	1,138-1,145
28.	Limestone and siltstone--limestone mostly fine-grained, some coarse-grained in upper part, some aphanitic in lower interval; yellowish-gray, light to very light gray, light olive-gray, much speckled by light brown; slightly glauconitic; silty; micaceous; much intraformational conglomerate; a few	32	634	1,106-1,138

Description	Thickness in feet: Interval	Cumulative	Feet above base
girvanella; beds 4 inches and thinner. Siltstone alternates with limestone, pale-olive, calcareous, glauconitic, micaceous, argillaceous, very thin bedded to nodular from wavy shale films. Much very fine sand, sand and silt mostly feldspar as clear rhombs and authigenic overgrowths around detrital grains, quartz scarce; hydrobiotite and muscovite common.			
Thin sectioned from 1,105 to 1,110, 1,115 to 1,120, 1,125 to 1,130, and 1,135 to 1,140 feet, four sections From 1,105 to 1,110 feet, limestone--silt and a few trilobite and pelmatozoan fragments in a mottled aphanitic to microgranular (stromatolitic) matrix; silt mostly authigenic feldspar rhombs, some detrital centers; glauconite-ragged, much admixed calcite, fragmental, in part replaces pelmatozoan debris; an area of coarse-grained, clear calcite probably fills a void. From 1,115 to 1,120 feet, limestone--two types, one composed of intraclasts, trilobite fragments, much slightly enlarged pelmatozoan debris, pellets, silt, and a few glauconite grains in a fine-grained, slightly cloudy calcite matrix; the other is aphanitic with many feldspar rhombs, much detrital feldspar, some altered biotite, a little fossil debris, a few tiny glauconite grains, and appears to be the source of most intraclasts; other intraclast-like objects derived from fossil fillings, in part are coated by glauconite that in part is in "ordered" films. From 1,125 to 1,130 feet, limestone--nodular, two types interbedded; one with glauconite, pellets, and much silt in a very fine-grained, cloudy calcite matrix; the other with trilobite, pelmatozoan, and calcareous brachiopod debris and very little silt in a very fine- to medium-			

Description	Thickness in feet: Interval	Cumulative	Feet above base
grained, clear calcite matrix; silt mostly detrital and authigenic feldspar, many rhombs some with weathered detrital centers, quartz scarce; muscovite and altered biotite common; some dolomite 0.1 to 0.25 mm, in part replaced by calcite and admixed limonite. From 1,135 to 1,140 feet, limestone--mostly silt, pellets, hexactinellid spicules (Pl. 17, Fig. 2), and glauconite and a little pelmatozoan debris in a microgranular matrix; one thin bed composed of authigenically enlarged pelmatozoan debris slightly chertified, enclosing trilobite fragments, and hexactinellid spicules composed of crytocrystalline silica; silt mostly authigenic feldspar rhombs and detrital feldspar; glauconite about 0.05 mm, rounded to angular. Trilobite fragments common; hexactinellid spicules abundant in upper part; Plectotrophia in float appears to be from 1,135 to 1,138 feet. Fossils collected by Ellinwood from 1,109 feet, Chariocephalus whitfieldi Hall.			
29. Limestone--mostly aphanitic to microgranular and very fine-grained, stromatolitic, very light gray with a greenish cast, mottled, massive. Some coarse-grained in upper part, very light gray to yellowish gray, some grayish-orange in lower 10 feet; silt scarce, mostly feldspar as clear rhombs and authigenic overgrowths around detrital grains, quartz scarce; a lens of intraformational conglomerate from 1,082 to 1,083 feet; beds mostly conform to shape of stromatolites. Thin sectioned from 1,065 to 1,070, 1,075 to 1,080, 1,085 to 1,090, and 1,095 to 1,100 feet, four sections.	44	678	1,062-1,106

Description	Thickness in feet: Interval	Cumulative	Feet above base
From 1,065 to 1,070 feet, limestone--a few sharp intraclasts, abundant hazy intraclasts (or possibly algae), a few pellets and trilobite and pelmatozoan fragments, and a little silt and glauconite in a very fine- to fine-grained, clear calcite matrix; intraclasts (?) mostly less than 1 mm, grade imperceptibly to pellets, contain a few rhombs of authigenic feldspar; glauconite pale, very scarce, a few mosaics of medium-grained, clear calcite probably fill voids. From 1,075 to 1,080 feet, limestone--two types, mostly mottled and silty, aphanitic; some slightly silty with trilobite, calcareous brachiopod and pelmatozoan debris in aphanitic to microgranular matrix; silt mostly authigenic feldspar rhombs; glauconite very scarce; dolomite scarce, about 0.15-mm rhombs, mostly replaced by calcite and admixed limonite. From 1,085 to 1,090 feet, limestone--mottled, densely aphanitic, and microgranular (stromatolitic); authigenic feldspar rhombs common; fossil debris and glauconite very scarce, a few calcite spicules; dolomite 0.1 to 0.4 mm, some peripheral limonitic stain; an irregular vein-like body of fine-grained, mosaic calcite. From 1,095 to 1,100 feet, limestone--algae, altered algae, or perhaps intraclasts and/or pellets, and a few trilobite and pelmatozoan fragments and uniformly distributed dolomite in a very fine- to fine-grained matrix; dolomite 0.1 to 0.25 mm, limonite-stained; glauconite and silt very scarce.			
Fossils collected by Dixon from 1,085 to 1,090 feet, *Stigmacephaloides curvabilis* Ellinwood; from 1,095 - 1,100 feet, *Briscoia* sp.?, *Ptychaspis* sp., *Stigmacephaloides curvabilis* Ellinwood, and *Billingsella* sp.; from 1,100-1,105 feet, *Stigmacephaloides curvabilis* Ellinwood, and *Billigsella texana*? Bell; from 1,105 feet, *Ptychaspis* sp.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Ellinwood from 1,093 feet, Stigmacephaloides curvabilis Ellinwood; from 1,095 feet, Ptychaspis sp.; from 1,100 feet, Drumaspis idahoensis Resser, Stigmacephaloides curvabilis Ellinwood, and syntrophid? brachiopod.			
30. Siltstone and limestone--mostly siltstone, in lower part light-gray speckled dark yellowish-orange, in upper part yellowish-gray, dusky grayish-yellow, pale yellowish-orange, upper sample grayish orange-pink; very calcareous; somewhat glauconitic; some very fine sand in lower part; silt and sand mostly feldspar as rhombs and authigenic overgrowths around detrital grains, some quartz; micaceous; argillaceous; in part fissile. Limestone mostly coarse- to medium- grained, light-gray, very silty, from 1,035 to 1,040 feet, some pisolites; from 1,030 to 1,031 feet, fine grained, one bed; from 1,035-1,036 feet, in part stromatolitic, one bed from 1,037 to 1,038 feet, one bed; from 1,038 to 1,045 feet, a few thin beds; from 1,045 to 1,053 and 1,058 to 1,062 feet, a few beds up to 6 inches alternating with siltstone.	37	715	1,025-1,062
Thin sectioned from 1,025 to 1,030, 1,035 to 1,040, 1,045 to 1,050, and 1,060 to 1,065 feet, four sections. From 1,025 to 1,030 feet, limestone--intraclasts, ooids, dolomite, and a little trilobite and pelmatozoan debris in a fine-grained calcite matrix, some radial calcite; intraclasts aphanitic to microgranular, rather small, in part with overgrowth; in part slightly silty, a few contain ooids; ooids indistinct, coarse radial structure, not sharply separated from matrix, in part replaced by dolomite; silt, a few tiny rhombs of feldspar; glauconite very scarce, invades and forms "ordered" film about one			

Description	Thickness in feet: Interval	Cumulative	Feet above base
pelmatozoan fragment; dolomite 0.1 to 0.3 mm, replaces ooids and intraclasts, undigested or possibly replacement calcite common, some peripheral limonitic stain. From 1,035 to 1,040 feet, limestone--intraclasts, mica, and a little silt and trilobite debris in a fine- to medium-grained, clear to slightly cloudy calcite mosaic of secondarily enlarged pelmatozoan debris; intraclasts mostly small pebbles, silty, micaceous, glauconitic, indistinctly pelleted, aphanitic- to fine-grained; silt mostly authigenic feldspar rhombs, a few detrital centers; mica mostly altered biotite and hydrobiotite; glauconite mostly less than 0.05 mm, angular; dolomite represented by rhombic holes and limonitic clay, very scarce. From 1,045 to 1,050 feet, limestone--intraclasts and some trilobite debris in a fine- to medium-grained, calcite matrix of secondarily enlarged pelmatozoan debris; intraclasts of pebble and granule size and smaller grains, mostly microgranular to very fine-grained, a few aphanitic, pelleted, micaceous, silty, slightly glauconitic; silt mostly authigenic feldspar rhombs, some clear detrital; mica, altered biotite and hydrobiotite; dolomite 0.25 mm, mostly replaced by calcite and admixed limonite, scarce. From 1,060 to 1,065 feet, limestone--mottled, in part silty, indistinctly pelleted, aphanitic to microgranular (stromatolitic); silt mostly authigenic feldspar rhombs and clear detrital grains, many opaque grains white, red, and black, quartz very scarce; mica and glauconite scarce; trilobite and pelmatozoan fragments very scarce.			
Locality 86T-16-8G_b may be either from the lower part of this interval or the immediately underlying			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Morgan Creek limestone.			
Fossils collected by Ellinwood from 1,025 feet, *Pseudagnostus* cf. *P. communis* (Hall and Whitfield), *Drumaspis idahoensis* Resser, *Saratogia modesta* (Lochman and Hu), *Ptychaspis bullasa* Lochman and Hu, *Billingsella texana* Bell, and *Sinuella minuta* Knight; from 1,029 feet, *Idahoia wisconsensis* (Owen) and *Billingsella coloradoensis* (Shumard).			
Morgan Creek Limestone Member: 142 feet thick			
31. Limestone--mostly coarse-grained, some fine- and very fine-grained in lower part; mostly very light gray, some yellowish-gray, speckled by grayish-orange and medium to dark yellowish-orange, stromatolites very light olive gray with a greenish cast; glauconite abundant; very fine sand abundant, silt common in lower part to abundant in upper part, silt and sand mostly feldspar, in part detrital, in part clear rhombs and authigenic overgrowths, quartz common; some hydrobiotite and muscovite; a few dolomite patches beneath lower stromatolites, fine-grained, dark yellowish-orange; stromatolites very fine grained, 6 to 18 inches in diameter, from 1,009 to 1,010 and 1,012 to 1,014 feet; some ooids from 1,015 to 1,020 feet; intraclasts common; beds mostly 6 to 24 inches, thinner toward top, a few nodular beds in upper 8 feet.	24	739	1,001-1,025
Thin sectioned from 1,000 to 1,005 and 1,015 to 1,020 feet, two sections. From 1,000 to 1,005 feet, limestone--indistinct intraclasts, abundant silt and very fine sand, some glauconite and pellets, and a few flakes of mica and much secondarily enlarged pelmatozoan debris in a microgranular			

Description	Thickness in feet: Interval	Cumulative	Feet above base
matrix; intraclasts aphanitic, otherwise similar to matrix; silt and very fine sand mostly feldspar, in part authigenic, numerous rhombs, many detrital grains in part twinned, some authigenic overgrowth, quartz very abundant, black opaque minerals common; mica scarce, altered biotite, muscovite, and hydrobiotite; glauconite 0.03 to 0.15 mm, grains rounded to angular, a few curved, some appear to be transitional from mica to glauconite. From 1,015 to 1,020 feet, limestone--dolomite, intraclasts, glauconite, pelmatozoan and a little trilobite debris in a microgranular to fine-grained matrix; intraclasts aphanitic to microgranular, rather small, some silt, mostly replaced by dolomite; silt very scarce, mostly quartz and feldspar both detrital and authigenic; glauconite 0.4 to 1 mm, mostly rounded to elliptical, a few lobate grains, some fragments, "moth-eaten" appearance from admixed calcite, almost completely replaces shell of one gastropod (Pl. 17, fig. 1); dolomite 0.05 to 0.25 mm, replaces in part pelmatozoan and trilobite debris, intraclasts and matrix.			
Fossils collected by Ellinwood from 1,003 feet, Drumaspis texana Resser, Ptychaspis bullasa Lochman and Hu, Pseudodicellomus mosaicus (Bell), Sinuella minuta Knight, Saratogia fria Lochman and Hu, and linguloid; from 1,009 feet, Drumaspis texana Resser, Pseudagnostus cf. P. communis (Hall and Whitfield), Saratogia fria Lochman and Hu, Saratogia modesta (Lochman and Hu), Wilbernia pero (Walcott), Billingsella coloradoensis (Shumard), and Taenicephalina globula Lochman and Hu; from 1,017 feet, Drumaspis texana Resser, Pseudagnostus cf. P. communis (Hall and Whitfield),			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Saratogia fria Lochman and Hu, Saratogia modesta (Lochman and Hu), and Drumaspis idahoensis Resser; from 1,022 feet, Drumaspis idahoensis Resser, Idahoia wisconsensis (Owen), Wilbernia pero (Walcott), and Billingsella texana Bell.			
Fossils collected by Dixon from 1,015 to 1,025 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis idahoensis Resser, Hyolithes sp., and Billingsella coloradoensis (Shumard).			
32. Limestone--mostly fine- and very fine-grained, some coarse-grained; very light gray, stromatolites mottled medium-gray with greenish cast; glauconitic; much very fine sand and silt, sand and silt mostly feldspar, in part detrital, in part clear rhombs and authigenic overgrowth, quartz common; some hydrobiotite and muscovite; stromatolites in lower part biscuit-like forms up to 2 feet in diameter, occur as individuals and groups; recessive, poorly exposed.	5	744	996-1,001
33. Limestone--mostly coarse-grained, some fine-grained; mostly very light gray in part with a greenish cast, in lower part yellowish-gray to light olive-gray, specks and mottles of light to dark yellowish-orange abundant; glauconitic, glauconite grains vary directly in size with the grain size of the enclosing limestone; sand very fine and fine, abundant, a few medium to coarse grains from 985 to 990 feet, silt common, silt and sand mostly detrital feldspar, some authigenic overgrowth, quartz abundant; hydrobiotite and muscovite common; beds in upper part, along creek massive, away from creek, 4 to	23	767	973 - 996

Description	Thickness in feet: Interval	Cumulative	Feet above base
12 inches, in lower part 4 to 12 inches alternating with thin nodular, silty zones.			
Thin sectioned from 980 to 985 and 990 to 995 feet, two sections. From 980 to 985 feet, limestone--dolomite, authigenically enlarged pelmatozoan debris, intraclasts, some glauconite and silt, and a few tiny phosphatic brachiopod fragments in a microgranular to fine-grained matrix; intraclasts in part indistinct, mostly microgranular to very fine grained, silty, glauconitic, many replaced by dolomite; silt mostly feldspar, many rhombs, some detrital grains, a few quartz grains; a few flakes of altered biotite; glauconite 0.05 to 0.25 mm, rounded to angular; dolomite 0.05 to 0.25 mm, mostly replaces intraclasts and pelmatozoan debris, slight peripheral limonitic stain. From 990 to 995 feet, limestone--abundant trilobite fragments, a few intraclasts, much secondarily enlarged pelmatozoan debris, glauconite, and silt in an aphanitic to very fine-grained matrix; large intraclasts (?) or possible burrows, mostly irregular, contain much fossil debris, silt and sand mostly detrital feldspar, some grains twinned, many rhombs, quartz common; many opaque shreds may be altered biotite, in addition in intraclasts a few shreds of muscovite and hydrobiotite; glauconite 0.05 to 0.4 mm, mostly with admixed calcite (Pl. 16, fig. 6), grains rounded to elliptical to curved, some definitely show interlaying of hydrobiotite and glauconite (Pl. 16, fig. 6), invades pelmatozoan debris.			
Fossils collected by Ellinwood from 975 feet, Conaspis masonensis Ellinwood, Taenicephalus shumardi			

Description	Thickness in feet: Interval	Cumulative	Feet above base
(Hall), Huenella texana (Walcott), and Taenicephalus sp.; from 982 feet, Conaspis masonensis Ellinwood, Taenicephalus shumardi (Hall), Taenicephalus sp., and Pseudodicellomus mosaicus (Bell); from 983 feet, Idahoia lirae (Frederickson), Idahoia lirae (Frederickson), var. A Bell in Bell and Ellinwood, and Wilbernia diademata (Hall); from 986 feet, Idahoia lirae (Frederickson), var. A Bell in Bell and Ellinwood, Saratogia americana (Lochman and Hu), and Pseudodicellomus mosaicus (Bell); from 987 feet, Idahoia lirae (Frederickson), var. A Bell in Bell and Ellinwood, Saratogia americana (Lochman and Hu), Pseudodicellomus mosaicus (Bell), Wilbernia diademata (Hall), and Idahoia lirae (Frederickson); from 994 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Saratogia americana (Lochman and Hu), and Sinuella minuta Knight. Fossils collected by Dixon from 980-985 feet, Billingsella coloradoensis (Shumard).			
34. Limestone--mostly very coarse-grained and fine-grained; very light gray to greenish gray and yellowish-gray, some pale grayish-brown and light yellowish-orange, near middle speckled by grayish-orange siltstone in lower sample; glauconite abundant; sand mostly very fine and fine, abundant, a few medium to coarse grains from 965 to 970 feet, sand and silt mostly detrital feldspar, some authigenic overgrowth, quartz abundant; hydrobiotite and muscovite common; beds vary widely in thickness. From 947 to 948, 950 to 956, 958 to 963, 964 to 966, and 967 to 973 feet, mostly fine-grained, nodular, recessive; rest mostly coarse-grained; from 948 to 950 feet, thick-bedded; from 956 to 958 feet, 4-inch beds at	26	793	947 - 973

Description	Thickness in feet: Interval	Cumulative	Feet above base
bottom to 12-inch bed at top; from 963 to 964 feet, one bed; from 966 to 967 feet, 2- to 4-inch beds; from 969 to 971 feet, a few 4-inch beds.			
Thin sectioned from 950 to 955, 960 to 965, and 970 to 975 feet, three sections. From 950 to 955 feet, limestone--brachiopods, both calcareous and phosphatic, and trilobite debris, glauconite, silt, very fine sand, and mica mostly in a fine-grained matrix of secondarily enlarged pelmatozoan debris; silt and very fine sand mostly feldspar, twinned grains numerous, rhombs common, quartz abundant, opaque minerals numerous, a few zircon grains; glauconite small, rounded to angular; mica mostly altered biotite and muscovite, some hydrobiotite; a swirled area, possibly a burrow, very argillaceous, center very coarse grained, clear calcite; dolomite represented by rhombic holes and limonite stain, very scarce. From 960 to 965 feet, limestone--brachiopod and trilobite debris with radial calcite, a few phosphatic brachiopod fragments and glauconite mostly included in authigenic calcite added to pelmatozoan debris; very fine sand and silt scarce, mostly quartz, a few grains of feldspar, mostly twinned; glauconite 0.1 to 0.5 mm, rounded to elliptical and fragmental, in part "moth-eaten" appearance from admixed calcite; dolomite 0.15 to 0.3 mm, very scarce, replaced by calcite and admixed limonite. From 970 to 975 feet, limestone--indistinct calcareous brachiopod and trilobite debris mostly recrystallized, a few phosphatic brachiopod fragments and glauconite included in authigenic calcite added to pelmatozoan debris; very fine sand and silt scarce, mostly quartz, a few			

Description	Thickness in feet: Interval	Cumulative	Feet above base
grains of feldspar; glauconite mostly 0.05 to 0.25 mm, some admixed calcite, mostly angular, some rounded to lobate, one elliptical grain, 1 mm. Fossils collected by Ellinwood from 948 feet, Taenicephalus shumardi (Hall), Wilbernia halli Resser, and Billingsella texana Bell; from 952 feet, Taenicephalus shumardi (Hall), Wilbernia expansa Frederickson, and Billingsella texana Bell; from 957 feet, Billingsella coloradoensis (Shumard) and Pseudodicellomus mosaicus (Bell). Fossils collected by Dixon from 960-965 feet, Billingsella texana Bell; from 970-975 feet, Billingsella texana Bell and Huenella texana (Walcott).			
35. Limestone--mostly coarse-grained, very light gray and very light olive gray both with a greenish cast, yellowish-gray; very glauconitic, grains large; sand very fine and fine, abundant, silt common, sand and silt mostly detrital feldspar, some authigenic overgrowths, some quartz; muscovite abundant, some hydrobiotite; dolomite as bedding plane patches 6 to 12 inches in size throughout interval, fine-grained, dark yellowish-orange; beds mostly 6 to 12 inches. One thin section from 940 to 945 feet. Limestone--abundant trilobite debris with some radial calcite and glauconite mostly in matrix of authigenically enlarged pelmatozoan debris; some very fine-grained, cloudy calcite matrix; trilobite debris in part represented by ghosts; silt very scarce, mostly quartz and feldspar; glauconite 0.05 to 0.3 mm, mostly "moth-eaten" appearance from admixed calcite, rounded to lobate and fragmental, a few grains appear to replace biotite.	13	806	934-947

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Bell from 934-934.5 feet, Comanchia amplooculata (Frederickson), Irvingella major Ulrich and Resser, Sulcocephalus candidus (Resser), Parabolinoides granulosus Ellinwood, Parabolinoides contractus Frederickson, Eoorthis remnicha (Winchell), Eoorthis indianola (Walcott), Billingsella coloradoensis (Shumard), Angulotreta aff. triangularis Palmer, Angulotreta microscopica (Shumard), Angulotreta microscopica (Shumard), var. digitalis Bell, Ceratreta hebes? Bell, and Pseudodicellomus mosaicus (Bell); from 934.5-935 feet, Irvingella major Ulrich and Resser, Parabolinoides contractus Frederickson, Parabolinoides granulosus Ellinwood, Billingsella coloradoensis (Shumard), Eoorthis indianola (Walcott), Eoorthis remnicha (Winchell), Pelagiella sp., Angulotreta microscopica (Shumard), var. digitalis Bell, Angulotreta aff. triangularis Palmer, Pseudodicellomus mosaicus (Bell), pelmatozoan columnals, linguloids types A and B, and Hyolithes sp.; from 935.5-936 feet, Parabolinoides contractus Frederickson, Orygmaspis llanoensis (Walcott), Pelagiella sp., Billingsella coloradoensis (Shumard), Eoorthis remnicha (Winchell), Angulotreta aff. triangularis Palmer, Angulotreta microscopica (Shumard), linguloid, and pelmatozoan plates and columnals; from 936-936.5 feet, Orygmaspis llanoensis (Walcott), Billingsella coloradoensis (Shumard), and Angulotreta microscopica (Shumard); from 943 feet, Billingsella coloradoensis (Shumard), Huenella abnormis (Walcott), Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), and pelmatozoan columnals.			
Fossils collected by Dixon from 934± feet, Angulotreta aff. triangularis Palmer, Angulotreta microscopica (Shumard),			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Angulotreta microscopica (Shumard), var. digitalis Bell, ?Pseudodicellomus mosaicus (Bell), Hyolithes sp., linguloid, pelmatozoan columnal, and coral??; from 935-940 feet, Pseudodicellomus mosaicus (Bell), Angulotreta microscopica (Shumard), Angulotreta aff. triangularis Palmer, Orygmaspis llanoensis (Walcott), Taenicephalus gouldi (Frederickson), and spicules; from about 944 feet, Taenicephalus shumardi (Hall), Orygmaspis llanoensis (Walcott), and Billingsella coloradoensis (Shumard); from 945 feet, Huenella abnormis (Walcott); from 946 feet, Taenicephalus shumardi (Hall), Billingsella coloradoensis (Shumard), Billingsella texana Bell, Pseudodicellomus mosaicus (Bell), and Wilbernia halli Resser.			
Fossils collected by Ellinwood from 935.25 feet, Parabolinoides contractus Frederickson, Eoorthis indianola (Walcott), and Comanchia amplooculata (Frederickson); from 944.5 feet, Conaspis testudinatus Ellinwood, Orygmaspis llanoensis (Walcott), Taenicephalus shumardi (Hall), Wilbernia halli Resser, Billingsella texana Bell, Huenella abnormis (Walcott), Angulotreta microscopica (Shumard), and Pseudodicellomus mosaicus (Bell).			
Locality 86T-16-8H is from lower part of interval.			

As intervals from 883 to 925 feet are not all 5 feet, footages are as follows:

929 to 935	900 to 906
923 to 929	895 to 900
918 to 923	889 to 895
912 to 918	883 to 889
906 to 912	

Description	Thickness in feet: Interval	Cumulative	Feet above base
36. Limestone--coarse-grained; in upper part very light olive gray to very light gray and yellowish-gray, mostly darker downward, grayish orange-pink, pale-brown, light to very light brown, many specks and mottles of dark yellowish-orange, grayish-orange, light-brown, and from 912 to 918 feet, moderate reddish-brown; glauconite abundant, coarse; silt scarce, sand in upper part, very fine to fine, abundant, below 912 feet, fine to medium, some coarse, in lower sample some coarse to very coarse, larger grains mostly quartz, finer portion mostly detrital feldspar, some authigenic overgrowth; some biotite, altered biotite, and hydrobiotite; ooids common in lower part; mudball-like objects and intraclasts common, flat pebble-like objects at 903 feet up to 5 inches in length; bedding wavy, beds about 2 to 10 inches, thinner bedded part recessive.	33	839	901-934

Thin sectioned from 906 to 912, 918 to 923, and 929 to 935 feet, three sections. From 906 to 912 feet, limestone--trilobite debris with some radial calcite, dolomite, glauconite, a few ooids and intraclasts mostly included in authigenic calcite added to pelmatozoan debris, some matrix aphanitic and some medium-grained, clear calcite; intraclasts small, mostly aphanitic, in part appear to have been fossil fillings, in part replaced by dolomite; ooids mostly radial calcite about fossil fragments, some concentric structure and included stringers of aphanitic calcite; fossils filled by limonitic clay, some dolomite, glauconite, and silt; silt and very fine sand very scarce, mostly quartz and feldspar; glauconite 0.05 to 0.25 mm, grains rounded to angular, some admixed calcite, much peripheral alteration; dolomite 0.05 to 0.3 mm, some peripheral limonitic stain, mostly replaces ooids, pelmatozoan debris and

Description	Thickness in feet: Interval	Cumulative	Feet above base
matrix. From 918 to 923 feet, limestone--abundant trilobite, some pelmatozoan debris, a few phosphatic brachiopod fragments, and some silt and very fine sand in an aphanitic to very fine grained matrix; silt and very fine sand mostly detrital feldspar, twinned grains and rhombs common, quartz abundant; a few flakes of altered biotite (one grain may be altering to glauconite) and muscovite; glauconite 0.05 to 0.75 mm, rounded to lobate and fragmental, "moth-eaten" appearance from admixed calcite, some limonitic stain along stylolites and in fillings of fossil cavities. From 929 to 935 feet, limestone--abundant trilobite and pelmatozoan debris, a calcareous brachiopod shell and glauconite in a faintly pelleted, aphanitic matrix; silt scarce, mostly detrital feldspar, rhombs common, some quartz; glauconite 0.25 to 1 mm, lobate to rounded and fragmental, much admixed calcite, in part forms ordered peripheral films, invades a calcareous brachiopod (Pl. 16, fig.5), encompasses fossil debris, and fills hollows in fossils.			
Fossils collected by Dixon from 900-906 feet, Kindbladia wichitaensis (Resser), ?Elvinia roemeri (Shumard), and Linnarssonella girtyi Walcott; from 906-912 feet, ?Elvinia roemeri (Shumard) and Linnarssonella girtyi Walcott; from 918-923 feet, Elvinia roemeri (Shumard), Linnarssonella girtyi Walcott, linguloids types A and B, spicule, and pelmatozoan plates and columnal; from 923-929 feet, Camaraspis convexa (Whitfield), ?Cliffia lataegenae (Wilson), Dellea suada (Walcott), Dokimocephalus intermedius (Resser), Elvinia roemeri (Shumard), and Linnarssonella girtyi Walcott; from			

Description	Thickness in feet: Interval	Cumulative	Feet above base
930+ feet, Burnetiella urania (Walcott), Dellea suada (Walcott), Dokimocephalus intermedius (Resser), Elvinia roemeri (Shumard), Irvingella major Ulrich and Resser, Linnarssonella girtyi Walcott, orthid brachiopod, Angulotreta sp., linguloid type A, and spicule; from 932+ feet, Linnarssonella girtyi Walcott, Camaraspis convexa (Whitfield), Deadwoodia duris (Walcott), Elvinia roemeri (Shumard), Irvingella major Ulrich and Resser, Pterocephalia sanctisabae Roemer, Angulotreta aff. triangularis Palmer, Angulotreta microscopica (Shumard), Angulotreta microscopica (Shumard), var. digitalis Bell, Pseudodicellomus mosaicus (Bell), punctolinguloid and bony? plate, linguloids types A and B, and Hyolithes sp.			
Fossils collected by Wilson from 912 feet, Kindbladia wichitaensis (Resser), Plataspella anatina (Resser), and Linnarssonella girtyi Walcott; from 913 feet, Deadwoodia duris (Walcott), Elvinia roemeri (Shumard), Irvingella major Ulrich and Resser, Kindbladia wichitaensis (Resser), Plataspella anatina (Resser), Linnarssonella girtyi Walcott, Xenocheilos minutum Wilson, and "punctolinguloid;" from 923 feet, Dokimocephalus intermedius (Resser), Elvinia roemeri (Shumard), and Linnarssonella girtyi Walcott; from 925 feet, Burnetiella urania (Walcott), Camaraspis convexa (Whitfield), and Elvinia roemeri (Shumard); from 926 feet, Dellea suada (Walcott), Elvinia roemeri (Shumard), Pterocephalia sanctisabae Roemer, orthid brachiopod, Camaraspis convexa (Whitfield), Kindbladia wichitaensis (Resser), Dokimocephalus intermedius (Resser), Linnarssonella girtyi Walcott, linguloid fragment, and pelmatozoan columnals.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Bell from 929 feet, Burnetiella urania (Walcott), Camaraspis convexa (Whitfield), Dellea suada (Walcott), Dokimocephalus intermedius (Resser), Elvinia roemeri (Shumard), Pterocephalia sanctisabae? Roemer, Linnarssonella girtyi Walcott, Angulotreta sp., trilobite gen. and sp. undet., orthid brachiopod, linguloid type A and odd linguloid, and pelmatozoan columnals; from 932.5-933 feet, Elvinia roemeri (Shumard), Irvingella major Ulrich and Resser, Sulcocephalus candidus (Resser), and linguloids; from 933.5-935 feet, linguloids types A and B, ?Pseudodicellomus mosaicus (Bell), Angulotreta microscopica (Shumard), Irvingella major Ulrich and Resser, Comanchia amplooculata (Frederickson), and Sulcocephalus candidus (Resser).			
37. Limestone--coarse to very coarse grained; pale grayish orange-brown, moderate-brown, grayish-red, pale reddish-brown, yellowish-orange, moderate yellowish-brown, and various other shades of pale-red and brown, speckled in part by dark yellowish-orange; glauconitic; silt scarce, very sandy at base, less sandy upward, sand fine to very coarse, a few granules at 883 feet, mostly iron-stained quartz, some detrital feldspar with authigenic overgrowth in finer fraction; intraclastic; bedding wavy, beds 4 to 12 inches.	18	857	883-901
Thin sectioned from 883 to 889 and 895 to 900 feet, two sections. From 883 to 889 feet, limestone--sand, ooids, dolomite, and pelmatozoan debris in a microgranular to fine-grained matrix; ooids 0.4 to 1.5 mm, almost entirely replaced by dolomite; sand fine to medium, mostly quartz covered with grinding dust, a few feldspar rhombs and grains without dust; glauconite very scarce,			

Description	Thickness in feet: Interval	Cumulative	Feet above base
weathered, in part ordered around pelmatozoan debris (Pl. 16, fig. 4) and phosphatic brachiopod fragments; dolomite 0.1 to 0.4 mm, ooids, and round pelmatozoan grains where replaced by dolomite are entirely surrounded by a layer of clear dolomite 0.02 to 0.03 mm thick conforming to the peripheral rhomb faces bordering the objects, isolated rhombs also encased in similar dolomite; limonite invades pelmatozoan debris and may have replaced glauconite, angular glauconite grains with peripheral limonite common. From 895 to 900 feet, limestone--intraclasts, authigenically enlarged pelmatozoan debris, ooids(?), algae(?), sand, and glauconite in a microgranular matrix; ooids(?) and intraclasts mostly replaced by dolomite; sand fine to coarse, mostly quartz, some feldspar in silt and very fine sand sizes, a few rhombs, some grains twinned; glauconite, much limonitic alteration; dolomite 0.1 to 0.5 mm, a very thin clear peripheral zone, weathered, much limonitic stain within grains, much interstitial hematite; limonite invades pores in pelmatozoan debris.			
Welge Sandstone Member: 8 feet exposed to fault			
38. Sandstone--medium to very coarse grained, a few granules; pale reddish-brown; some calcitic and limonitic cement; grains well-rounded to angular, in part spherical, in part reconstituted, glitter in sunlight; beds indistinct, a foot or more.	8	865	875-883

SHIFT along Eoorthis Bed about 1.5 miles north-eastward to downstream Threadgill Creek segment, continue down in section northward, entering drain at base of Welge Sandstone. Section from Eoorthis Bed to top of Welge Sandstone repeated as a check on thickness. Intervals of Morgan Creek Limestone described below are not quite the same as in the upstream segment.

Description	Thickness in feet: Interval	Cumulative	Feet above base
Downstream Threadgill Creek Segment			
Morgan Creek Limestone Member: 52 feet described			
36+. Limestone--coarse-grained, color similar to that in upstream segment, glauconitic, bedding wavy, beds mostly 6 inches or less, very fossiliferous, *Eoorthis* in top bed.	41	846	894-935
37-. Limestone--coarse-grained, color similar to that in upstream segment, glauconitic, very sandy at base to slightly sandy at top, much fossil debris, beds mostly less than 6 inches.	11	857	883-894
Welge Sandstone Member: 23 feet thick			
38. Sandstone--mostly medium- to very coarse-grained, some fine-grained, a few granules on top surface up to 0.2 inch; mostly pale reddish-brown, near base some grayish-brown quartzite, glauconitic, limonite cemented; from 860 to 865 feet two beds; from 874 to 883 feet massive, rest covered. Molds of trilobites common in bottom foot.	23	880	860-883
Riley Formation: 860* feet thick Lion Mountain Sandstone Member: 68* feet thick (78 feet described)			
39. Greensand and limestone--greensand about equally glauconite and quartz sand; dusky yellowish-green; calcitic; sand in upper part medium to very coarse, in lower part fine to coarse,	40	920	820-860

*The repetition of a distinctive faunal sequence suggested to Palmer that a fault at 792 feet repeats 10 feet of section. Even though the lithologic descriptions do not appear to support this suggestion, the excessive thickness of the Lion Mountain does. By the time this fault was discovered, it was too late to correct footages above this point.

Description	Thickness in feet: Interval	Cumulative	Feet above base
many grains spherical, surfaces mostly rough from reconstitution; a few nonmagnetic, black, opaque grains; phosphatic brachiopod fragments abundant; friable; well-exposed except for top 5 feet that is caliche covered even though in a vertical cliff. Limestone coarse-grained, lenticular cross-beds of trilobite coquinite; almost white to grayish-green where very glauconitic; abundant in lower part, decreases in amount upward. A few lenticular hematite concretions and thin, brown shale beds in lower part.			
Fossils collected from 821 feet, Aphelaspis walcotti Resser, Pseudagnostus cf. P. communis (Hall and Whitfield), and Angulotreta triangularis Palmer; from 825 feet, Aphelaspis walcotti Resser and Angulotreta triangularis Palmer; from 829 feet, Angulotreta triangularis Palmer; from 835 feet, Aphelaspis conveximarginata (Palmer); from 841 feet, Dytremacephalus granulosus Palmer and Apsotreta expansa Palmer; from 844 feet, Apsotreta expansa Palmer; from 848 feet, Sigmocheilus sigmoidalis Palmer, Pterocephalis concava Palmer, and Apsotreta expansa Palmer; from 850 feet, Apsotreta expansa Palmer.			
40. Greensand, sandstone, shale, and limestone--greensand from 811 to 812, 815 to 815.5, and 818 to 819 feet, about equally glauconite and quartz sand, grayish olive-green, very calcareous; hematite concretions at 811.5 feet, 2 inches thick, 10 inches in diameter, brownish-black, some are mostly glauconite with a red streak; at 818 feet 3 inches thick, 18 inches in diameter; sandstone from 815.5 to 818 feet, mottled by siltstone, weathers dark yellowish-gray; shale from 812 to 813 feet, moderate yellowish-brown, silty; limestone from 813 to 815 feet, mottled,	9	929	811-820

Description	Thickness in feet: Interval	Cumulative	Feet above base
glauconitic, sandy, in beds up to 6 inches; from 819 to 820 feet, white to greenish-gray, glauconitic, trilobite coquinite. Residue mostly quartz sand, glauconite, and shale, some silt, feldspar scarce; sand mostly reconstituted. Fossils collected from 811 feet, Aphelaspis walcotti Resser and Angulotreta triangularis digitalis Palmer; from 815 feet, Aphelaspis constricta Palmer, Aphelaspis longifrons Palmer, Pseudagnostus cf. P. communis (Hall and Whitfield), and Angulotreta triangularis digitalis Palmer.			
41. Limestone--coarse-grained, white to greenish-gray, mostly very glauconitic, sandy, sand reconstituted, silty, argillaceous, cross-bedded, somewhat trilobitic throughout, upper few inches a trilobite coquinite. Fossils collected from 805 feet, Aphelaspis walcotti Resser and Glaphyraspis ornata (Lochman); from 807 feet, Aphelaspis spinosa Palmer, Homagnostus cf. H. tumidosus Hall and Whitfield, Glaphyraspis ornata (Lochman) and Dictyonina perforata Palmer.	8	937	803-811
42. Sandstone and limestone--sandstone fine to very fine grained, some medium-grained; dark yellowish-brown and brownish-gray in part with a greenish cast, some mottles of light brownish-gray, silty shale; glauconitic; silty; argillaceous; a few black opaque minerals; feldspar scarce except in finer grain sizes; sand mostly reconstituted; a few thin beds of shale, grayish orange-pink; friable. Limestone from 791 to 791.5 and 792 to 792.5 feet, coarse-grained, brown, glauconitic,	13	950	790-803

Description	Thickness in feet: Interval	Cumulative	Feet above base
cross-bedded; a few lenses of white, trilobite coquinite in sandstone. Fossils collected from 800 feet, Aphelaspis walcotti Resser and Cheilocephalus breviloba (Walcott); from 802 feet, Aphelaspis walcotti Resser, Cheilocephalus breviloba (Walcott), and spicule type C.			
43. Limestone--coarse-grained, yellowish-brown speckled by dark yellowish-orange, somewhat glauconitic, a sandy zone near middle, sand fine to very fine, some silt and clay, top bed 1 foot, rest thinner bedded. Fossils collected from 787 feet, Coosia cf. C. albertensis Resser and Pseudagnostina? nordicus (Lochman).	4	954	786-790
44. Covered--probably mostly sandstone or shale.	3	957	783-786
45. Sandstone--fine-grained, dark yellowish-brown in part with a greenish cast, very glauconitic and calcareous, silty, argillaceous.	1	958	782-783
Cap Mountain Limestone Member: 418 feet thick			
46. Limestone--coarse-grained, pale yellowish-brown to dusky yellowish-brown, in part with a greenish cast, glauconitic, silty, very sandy, sand very fine to medium, poorly exposed. Fossils collected from 776 feet, Kingstonia (Ucebia) pontotocensis Lockman and Coosina cf. C. ariston (Walcott).	6	964	776-782
47. Limestone--coarse-grained, pale yellowish-brown speckled moderate yellowish-brown,	8	972	768-776

Description	Thickness in feet: Interval	Cumulative	Feet above base
very glauconitic, somewhat silty and sandy, sand fine and very fine, trilobites common throughout, beds 6 inches and less. Fossils collected from 774 feet, Coosina cf. C. ariston (Walcott).			
48. Limestone--coarse-grained; in lower part very light olive gray speckled pale yellowish-orange, darker upward, pale yellowish-brown speckled and mottled pale yellowish-orange to grayish-orange and moderate yellowish-brown; glauconitic; silty, sand fine and very fine, common except in lower 5 feet, abundant from 755 to 760 feet, sand and silt mostly quartz, detrital feldspar common, some authigenic overgrowth, a few rhombs; a few nonmagnetic, black, opaque grains; bedding wavy, beds up to 2 feet. Fossils collected from 736 feet, Opisthotreta depressa Palmer.	33	1,005	735-768
SHIFT eastward 175 feet; continue down in section northwestward.			
49. Limestone--mostly medium- to coarse-grained, some fine-grained; very light olive gray to yellowish-gray, mottled and speckled by grayish-orange and dark yellowish-orange, slightly darker near middle; silty throughout, silt most abundant from 685 to 695 feet, mostly detrital feldspar, some authigenic overgrowth, numerous rhombs, quartz common; glauconite and ooids scattered throughout, most glauconitic and oolitic from 680 to 685 and 695 to 700 feet; bedding wavy, beds up to 2 feet; above 695 feet, joints very much widened by solution. Fossils collected from 683 feet, Diraphora sp. and spicule type B;	60	1,065	675-735

Description	Thickness in feet: Interval	Cumulative	Feet above base
from 693 feet, Opisthotreta depressa Palmer, Paterina sp., and spicule type A; from 702 feet, Llanoaspis modesta (Lochman), Meteoraspis metra (Walcott), Tricrepicephalus thoosa (Walcott), Opisthotreta depressa Palmer, and spicule type A; from 732 feet, Kingstonia (Ucebia) pontotocensis (Lochman), Llanoaspis undulata Lochman, Coosina cf. C. ariston (Walcott), Opisthotreta depressa Palmer, and spicule type B.			
50. Limestone--alternating coarse-grained, light olive-gray, glauconitic, oolitic; and fine-grained; light gray to yellowish-gray, mottled and speckled yellowish-orange, silty, bedding wavy.	8	1,073	667-675
Fossils collected from 673 feet, Diraphora sp., Opisthotreta depressa Palmer, and Kinsabia variegata Lochman.			
51. Limestone--fine-grained; very light gray to medium light gray, mottled moderate brown and light brown; very silty; bedding wavy, massive, weathers to a smooth surface.	7	1,080	660-667
Fossils collected from 660 feet, Kormagnostus simplex Resser, Tricrepicephalus thoosa (Walcott), Opisthotreta depressa Palmer, Kinsabia variegata Lochman, and spicule type B.			
52. Limestone--coarse-grained; very light gray to yellowish gray and medium light gray; glauconitic; silty, silt mostly detrital feldspar, authigenic overgrowth common, rhombs numerous, some quartz; nonmagnetic, black opaque minerals common; in part oolitic; beds average about 4 inches.	8	1,088	652-660
Fossils collected from 655 feet, Arcuolimbus convexus Palmer,			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Coosella sp., Coosia connata (Walcott), Opisthotreta depressa Palmer, and Kinsabia variegata Lochman; from 656 feet, Kormagnostus simplex Resser, Pseudagnostina? nordicus (Lochman), Tricrepicephalus thoosa (Walcott), Tricrepicephalus texanus (Shumard), Diraphora sp., Paterina sp., Opisthotreta depressa Palmer, Kinsabia variegata Lochman, and spicule type B.			
53. Limestone--fine-grained; very pale orange to pale yellowish brown and grayish-orange; glauconite very scarce; very silty, silt mostly detrital feldspar, authigenic overgrowth and rhombs very common, some quartz; some siltstone aggregates in lower 10 feet; bedding wavy, weathers to smooth surface, away from drain weathers to silty soil with very little outcrop.	52	1,140	600-652
A fault, downthrown to south, crosses section at 645 feet, cutting out about 30 feet of beds as estimated by comparing the thickness of the silty zone in this drain with an estimated thickness of 90 feet in the next drain 0.5 mile to the east.			
SHIFT a few hundred feet downstream from mouth of drain, continue down in section to 580 feet along top of bluff, down face of bluff to 555 feet, then down Threadgill Creek along base of bluff.			
54. Limestone--fine- to coarse-grained; very light gray to very pale orange, dark yellowish-brown, very light olive gray, mottled and speckled by grayish-orange; glauconite abundant in some beds; in part oolitic; bedding wavy, beds average 6 inches.	25	1,165	575-600

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected from 580 feet, ?Genevievella cf. G. spinosa Lochman and Syspacheilus cf. S. camurus Lochman; from 583 feet, spicule type B; from 599 feet, Apsotreta orifera Palmer and Kinsabia variegata Lochman.			
55. Sandstone and limestone--very calcareous sandstone to very sandy limestone; from 520 to 522 feet, sandstone, very fine to medium grained, light-brown; from 522 to 523 feet, sandstone, medium- to very coarse-grained, grayish-brown to grayish-red, hematitic, grains rounded to spherical, polished; from 523 to 525 feet, limestone, fine- to medium-grained, light-brown, very sandy, a few hematitic layers, cross-bedded; from 525 to 526 feet, sandstone, fine- to medium-grained, grayish-orange, friable; from 526 to 527 feet, limestone and hematitic sandstone, grayish-brown to grayish-red; from 527 to 555 feet, sandstone and limestone, in upper part mostly sandstone, very fine- to medium-grained, grayish-orange to moderate yellowish-brown, in middle part very fine- to coarse-grained, pale-brown, in lower part mostly limestone, very coarse-grained, moderate-brown, sandy, sand mostly very fine to medium, some coarse, rounded to spherical, polished; silt common; glauconite mostly scarce, common in upper sample; from 555 to 575 feet, mostly limestone in upper part to mostly sandstone in lower part, limestone fine- to coarse-grained, yellowish-gray, pale-brown, mottled grayish-orange and dark yellowish-orange, sandstone mostly very fine to fine grained, pale to dark yellowish-brown, some fine- to coarse-grained, grayish-red to grayish-brown, some grains with bronzy luster, glauconite scarce, abundant silt, in part cross-bedded. Silt and very fine sand mostly	55	1,220	520-575

Description	Thickness in feet: Interval	Cumulative	Feet above base
quartz and feldspar, feldspar mostly detrital, some authigenic overgrowth, a few rhombs.			
SHIFT downstream across 2 small faults; continue down in section along valley wall to mouth of prominent drain. A 5-foot fault recognized after section was painted duplicates 5 feet of beds from 510 to 515.			
56. Sandstone--mostly very fine to fine grained, medium to coarse grains common in upper part to abundant in lower 5 feet, mostly pale-brown to moderate yellowish-brown; grayish-brown to grayish-red, hematitic, from 501 to 502 and 504 to 505 feet; some thin beds from 505 to 510 and 515 to 520 feet; grains well-rounded to spherical, polished; very calcareous.	20	1,240	500-520
Fossils collected from 505 feet, Kormagnostus simplex Resser; from 515 feet, Cedaria eurycheilos Palmer, Kormagnostus simplex Resser, and Menomonia sp.			
SHIFT downstream along valley wall; continue down in section angling downstream toward Threadgill Creek.			
57. Sandstone--in part very fine to fine grained, in part fine to coarse grained; yellowish-brown, mottled; grayish-red from 491 to 493 and 494 to 499 feet; very calcareous; medium to coarse grains well-rounded to spherical, polished.	13	1,253	487-500
Fossils collected from 499 feet, Cedaria eurycheilos Palmer.			
58. Limestone--coarse grained; mottled light-brown, orange and light-gray; sandy; oolitic; beds up to 8 inches; stylolites common.	5	1,258	482-487
59. Sandstone--very fine to fine grained, a few medium grains; pale yellowish-brown to moderate orange-pink,	10	1,268	472-482

Description	Thickness in feet: Interval	Cumulative	Feet above base
mottled; a few very calcareous beds border on limestone; beds 6 to 24 inches.			
60. Limestone--coarse-grained; yellowish-gray mottled dark yellowish-brown and pale reddish-brown; sandy; one bed.	1	1,269	471-472
61. Sandstone--mostly fine- to medium-grained, some very fine and coarse grained in bottom sample; pale to dark yellowish-brown, grayish-red from 446 to 447 feet; mostly mottled; very calcareous; cross-bedded from 453 to 454 feet; friable from 451 to 457 feet; beds mostly 6 to 24 inches; small faults possible cross this part of section.	25	1,294	446-471
SHIFT along valley wall near abandoned pasture road; continue down in section along small drain in Threadgill Creek.			
62. Sandstone--mostly very fine grained, some coarse to very coarse, spherical, polished grains in upper sample; grayish-orange to dark yellowish-brown, grayish-red from 427 to 428, 434 to 435, and 442 to 444 feet, a few beds from 437 to 442 feet; very calcareous; friable from 426 to 427 feet; 2-foot beds from 435 to 437 and 444 to 446 feet, rest thinner bedded; from 432 to 434 feet, covered; from 437 to 442 feet, poorly exposed.	21	1,315	425-446
Fossils collected from 429 feet, *Cedaria eurycheilos* Palmer, *Kormagnostus simplex* Resser, and *Menomonia* sp.; from 432 feet, *Cedaria eurycheilos* Palmer, and *Menomonia* sp.			
SHIFT up dip, using 6° dip, to top of bluff on north bank of Threadgill Creek; continue down in section northward to drain. An error of plus or minus 10 feet could result from the shift; in addition, error might result from faulting concealed by alluvium.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
63. Sandstone--mostly very fine to fine grained, a few medium grains, some coarse grains in upper and lower samples and from 380 to 395 feet, a few very coarse grains in bottom sample; moderate yellowish-brown to dark yellowish-brown to grayish-brown, mottled, slightly lighter colored upward, grayish-red from 372 to 373 and 405 to 407 feet; a few thin beds from 379 to 400 and 407 to 425 feet; mostly calcareous; from 364 to 365 feet and 407 to 425 feet, very calcareous bordering on limestone; silty, silt and very fine sand in some samples mostly quartz, in others mostly feldspar, detrital, weathered, a few grains with authigenic overgrowth, rhombs scarce; medium to very coarse sand, rounded to spherical, polished; beds up to 2 feet from 373 to 379 and 400 to 402 feet, rest thinner bedded; thin-bedded from 405 to 497 feet; poorly exposed from 365 to 372 and 379 to 400 feet; covered from 402 to 405 feet.	61	1,376	364-425
Fossils collected from 378 feet, Cedarina cordillerae (Howell and Duncan) and Modocia centralis (Whitfield).			
SHIFT downstream about 800 feet along bottom of calcareous bed at 364 feet; continue down in section along cut bank of Threadgill Creek, across alluvium from creek. The approximate level above which the rocks are calcareous enough to support abundant cedar is at 364 feet; a few cedar on the next interval below indicates that it is slightly calcareous.			
Hickory Sandstone Member: 364 feet thick			
64. Sandstone--mostly very fine to medium grained, some coarse grains, a few very coarse grains from 345 to 350 feet; finer grained part grayish-orange	24	1,400	340-364

Description	Thickness in feet: Interval	Cumulative	Feet above base
to moderate-brown, coarser grained part grayish-brown to blackish-red, hematitic, extends from 340 to 345, 347 to 350, and 361 to 364 feet, and alternates with finer grained, lighter colored beds from 351 to 360 feet; a few slightly calcitic patches; in part friable. Trilobites common mostly in darker and coarser grained beds; also phosphatic brachiopods in a few of these beds. Fossils collected from 345 feet, Kormagnostus simplex Resser and Syspacheilus dunoirensis (Miller); from 348 feet, Cedarina cordillerae (Howell and Duncan), Kormagnostus simplex Resser, Menomonia sp., and Syspacheilus dunoirensis (Miller); from 362 feet, Cedarina cordillerae (Howell and Duncan), Kormagnostus simplex Resser, and Menomonia sp.			
65. Sandstone--very fine to coarse grained, a few very coarse grains from 315 to 330 feet and in lower sample; moderate yellowish brown, pale yellowish-brown to moderate-brown, pale-brown; grayish-red from 311 to 312, 324 to 331, and 337 to 339 feet; fine-grained partly silty, silt and very fine sand, quartz and feldspar, feldspar mostly detrital, weathered, some authigenic overgrowth, feldspar scarce below 315 feet; argillaceous, mottled, friable from 301 to 302, 304 to 310, 312 to 315, and 319 to 322 feet; coarser grained part mostly darker, mottled, a few beds glauconitic; above 315 feet, coarser sand grains rounded to spherical, polished, below 315 feet mostly reconstituted. Fossils collected from 323 and 330 feet, Bolaspidella burnetensis (Walcott),	39	1,439	301-340

Description	Thickness in feet: Interval	Cumulative	Feet above base
Bonneterrina appalachia (Walcott), and Kormagnostus simplex Resser; from 340 feet, Syspacheilus dunoirensis (Miller).			
66. Sandstone--fine to very coarse grained, finer grained portion in lower part, grayish-red, silt balls common, cross-bedded.	6	1,445	295-301
Fossils collected from 296 feet, Bolaspidella wellsvillensis (Lochman and Denson).			
67. Sandstone--fine to very coarse, a few granules from 285 to 290 feet; pale yellowish-brown in part with a greenish cast to moderate-brown; in part glauconitic, very glauconitic from 287 to 289 feet; argillaceous; silty, silt mostly quartz, some detrital feldspar; from 285 to 287 feet, some silt balls and intraformational conglomerate pebbles; beds up to 2 feet, mostly thinner and friable; covered from 275 to 277 feet.	20	1,465	275-295
Phosphatic brachiopod fragments common from 277 to 279 and 289 to 295 feet. Fossils collected from 288 feet, Bolaspidella wellsvillensis (Lochman and Denson).			
The Hickory Sandstone above 275 feet is darker colored and more argillaceous than it is below this level.			
68. Sandstone and quartzite--very fine to very coarse grained, granules common; mostly light yellowish-gray in upper part, slightly darker downward, upper sample very pale grayish orange to very pale yellowish brown, microcline-bearing portions light grayish-orange; sand mostly quartz, very poorly sorted, grains	48	1,513	227-275

Description	Thickness in feet: Interval	Cumulative	Feet above base
fairly well-rounded, rough from reconstitution; beds 2 feet and less, alternating quartzite and sandstone; from 227 to 233 feet, quartzite, fine to very coarse grained, a few granules, microcline scarce, cross-bedded, circular pits on bedding plane at 232 feet; from 233 to 236 feet, sandstone, sand fine to very coarse, a few granules, cuneiform markings common; from 236 to 237 feet, quartzite, fine to very coarse grained, a few granules, cross-bedded; from 237 to 239 feet, thin-bedded sandstone or quartzite, 4-inch-wide Climactichnites; from 239 to 244 feet, sandstone, sand medium to very coarse, a few granules, much clay and silt matrix, some very fine grained, micaceous, circular pits at 239 feet, cuneiform markings common throughout; from 244 to 247 feet, covered; from 247 to 249 feet, sandstone, very fine grained, silty, argillaceous, micaceous, fissile; from 249 to 251 feet, quartzite, fine-grained, medium to coarse grains common, Cruziana at 250.5 feet, up to 6 inches long, 1.25 inches wide tapering to 0.75 inch, preserved on under side of bed, project downward about 0.5 inch; from 251 to 253 feet, sandstone, sand medium to very coarse, a few granules, clay and silt matrix, cuneiform markings common; from 253 to 254.5 feet, quartzite, fine-grained, a few medium to coarse grains, cross-bedded, a few trails; from 254.5 to 256 feet, sandstone, cuneiform markings common; from 256 to 269 feet, sandstone, medium to very coarse, a few granules, ripple marks and cross-beds at 264 feet, cuneiform markings abundant, beds 1 to 8 inches separated by silty shale; from 269 to 275 feet, mostly quartzite, some sandstone, medium to very coarse grained, some fine-grained,			

Description	Thickness in feet: Interval	Cumulative	Feet above base
top bed ripple-marked, 8 inches between crests, trails common, one *Cruziana* more than a foot long, top bed 2 feet, rest thinner.			
Cruziana collected from 250.5 feet.			
SHIFT downstream to opposite bank of Threadgill Creek; continue down in section.			
69. Sandstone and quartzite--in part fine-grained, microcline-bearing, light-grayish-orange; in part medium- to coarse-grained, yellowish-gray, clay matrix; from 220 to 224 feet, quartzite, in part cross-bedded; from 224 to 227 feet, sandstone with cuneiform markings, these continue upward another 3 feet but none are present at this level in the next interval above after the shift, indicating that beds were either gained or lost in making the shift.	7	1,520	220-227
SHIFT eastward about 0.6 mile along quartzite bed to eastern side of ridge between Threadgill and Squaw Creeks; continue down in section northward. Closely spaced faults near Threadgill Creek repeatedly offset the quartzite bed. The interval from the quartzite bed to the top of the light-colored Hickory Sandstone was measured just east of Threadgill Creek and again along Shell pipe line; the thickness of the interval in these two places checked within a foot.			
Squaw Creek Segment			
70. Sandstone and quartzite--mostly sandstone, fine to very coarse and medium to very coarse grained, granules scattered to abundant; upper part mostly yellowish-gray, some moderate orange-pink of various shades in upper few samples, some moderate reddish-orange, lower part mostly moderate reddish-orange and	113	1,633	107-220

Description	Thickness in feet: Interval	Cumulative	Feet above base
pinkish-gray, some grayish-red from 125 to 130 and 160 to 165 feet, bottom 3 samples from top down grayish-orange, moderate-brown, and very pale orange, and light-brown; grains rounded to spherical but very rough from reconstitution, very poorly sorted; some silty clay matrix between grains from 160 to 165 and 195 to 200 feet; cuneiform markings common at various levels; ripple marks at 182 feet, 2 inches between crests, trend N. 70 W; quartzite from 118 to 120 and 138 to 140 feet, poorly exposed from 145 to 180 and 200 to 220 feet.			
SHIFT about 300 feet northward along beds; continue down in section down slope.			
71. Sandstone and quartzite--sandstone, in upper part fine to very coarse grained, some granules, in lower part coarse to very coarse grained, many granules; in upper part moderate-red to pale-red, in middle part grayish-red, in lower part light-brown to moderate-brown; sand poorly sorted, grains very rough from reconstitution, original grains appear to have been mostly rounded to spherical; circular pits on bedding surface at 80 feet may be tubes weathering out, as pits this deep are not likely to be made by rain-drops; beds with cuneiform markings numerous, other type markings common; beds 6 inches or less to 2 feet; some quartzite from 85 to 95 feet; from 94 to 100 feet, poorly exposed.	37	1,670	70-107
SHIFT about 175 feet northward along beds; continue down in section down slope.			
72. Sandstone and quartzite--sandstone mostly medium to very coarse grained, some fine-grained, granules common to abundant, a few very small pebbles in lower part; in upper part pale-red	47	1,717	23-70

Description	Thickness in feet: Interval	Cumulative	Feet above base
to grayish-orange, near middle some light-brown, in lower part moderate orange-pink to moderate reddish-orange, some grayish-orange; grains poorly sorted, rough from reconstitution; mostly cross-bedded; beds up to 2 feet, mostly thinner; from 60 to 63 feet, quartzite, cross-bedded; poorly exposed from 25 to 34 and 42 to 50 feet.			
SHIFT about 75 feet south along beds; continue down in section at edge of bluff.			
73. Sandstone--fine to very coarse grained, many granules, a few very small pebbles; various shades of light-brown and orange-pink; grains poorly sorted, rough from reconstitution, originally appear to have been at least in part well-rounded to spherical; cross-bedding common throughout, no cross-bed set thicker than 1 foot; massive, beds up to 4 or 5 feet.	16	1,733	7-23
74. Conglomerate and sandstone--mostly granule and very small pebble conglomerate, a few pebbles up to 0.75 inch, wind-faceted pebbles scarce; sandstone, coarse to very coarse, many granules and very small pebbles, much clay matrix, light-brown to pale yellowish-brown, essentially one bed.	7	1,740	0-7
The Hickory Sandstone rests on an exfoliation dome of porphyritic, coarse-grained, pink granite, phenocrysts up to 2 inches. Sandstone was deposited to a depth of 3 feet in open joints in the granite. The upper part of the granite is weathered red; much of the weathering antedates deposition of the Hickory Sandstone.			

Table 33. Heavy mineral frequency counts, downstream Threadgill Creek segment, Mason and Gillespie Counties, Texas (counts made by T. R. Walker).

Member	Sample Interval (feet)	Zircon					Tourmaline				
		Total	Clear	Zoned	Dusty	Malacon	Total	Brown	Green	Blue	Black
Welge Sandstone	870-875	5.0	3.3	1.0	0.7	0.0	0.3	0.0	0.3	0.0	0.0
Lion Mountain Sandstone	835-840	7.3	5.3	0.7	1.3	0.0	0.0	0.0	0.0	0.0	0.0
	795-800	12.3	8.7	0.3	3.3	0.0	0.3	0.3	0.0	0.0	0.0
Cap Mountain Limestone	640-645	10.7	6.7	1.0	2.3	0.7	0.7	0.0	0.3	0.0	0.3
	600-605	7.3	6.0	0.0	1.3	0.0	1.3	0.0	1.3	0.0	0.0
	545-550	29.0	17.7	0.7	10.0	0.7	0.7	0.3	0.3	0.0	0.0
	500-505	31.0	21.0	1.3	8.7	0.0	0.7	0.3	0.3	0.0	0.0
	445-450	16.3	11.3	0.0	5.0	0.0	0.3	0.0	0.3	0.0	0.0
	375-380	22.7	14.7	0.7	7.3	0.0	0.7	0.3	0.3	0.0	0.0
Hickory Sandstone	345-350	13.7	6.7	0.3	6.7	0.0	0.7	0.0	0.7	0.0	0.0
	295-300	50.0	33.0	1.0	16.0	0.0	3.3	1.3	1.7	0.3	0.0
	245-250	38.7	27.0	2.7	9.0	0.0	3.3	1.0	2.3	0.0	0.0
	195-200	48.7	30.7	4.3	13.7	0.0	7.3	3.7	3.0	0.3	0.3
	145-150	21.0	16.3	0.7	4.0	0.0	2.0	1.3	0.7	0.0	0.0
	95-100	16.0	9.0	1.0	5.7	0.3	5.3	2.7	2.3	0.3	0.0
	45-50	14.7	9.0	1.3	4.3	0.0	2.7	1.3	1.3	0.0	0.0
	0-5	10.3	6.0	1.0	3.3	0.0	0.3	0.0	0.0	0.3	0.0

Table 33 (continued)

Member	Sample Interval (ft)	Garnet			Rutile			Other Minerals						
		Total	Colorless	Pink	Total	Amber	Foxy red	Anatase	Altered ilmenite	Leucoxene	Black opaque	Epidote	Barite	Unknown
Welge Sandstone	870-875	0.0	0.0	0.0	0.0	0.0	0.0	33.3	55.7	2.3	3.3	0.0	0.0	0.0
Lion Mountain Sandstone	835-840	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.7	0.0	50.0	0.0	0.0	0.0
	795-800	0.0	0.0	0.0	0.0	0.0	0.0	1.0	32.0	1.3	53.0	0.0	0.0	0.0
Cap Mountain Limestone	640-645	0.0	0.0	0.0	0.3	0.3	0.0	23.0	29.7	33.7	2.3	0.0	0.0	0.0
	600-605	0.0	0.0	0.0	0.7	0.7	0.0	17.7	26.0	44.3	2.3	0.0	0.0	0.0
	545-550	0.3	0.3	0.0	0.7	0.7	0.0	2.3	49.0	10.0	8.0	0.0	0.0	0.0
	500-505	0.7	0.7	0.0	0.0	0.0	0.0	3.3	46.0	3.7	14.7	0.0	0.0	0.0
	445-450	0.3	0.3	0.0	0.0	0.0	0.0	2.3	49.0	8.7	22.7	0.0	0.0	0.0
	375-380	0.0	0.0	0.0	0.3	0.3	0.0	6.7	42.7	5.3	21.7	0.0	0.0	0.0
Hickory Sandstone	345-350	1.0	0.7	0.3	0.0	0.0	0.0	9.7	38.3	15.0	21.7	0.0	0.0	0.0
	295-300	0.7	0.7	0.0	0.3	0.3	0.0	0.0	33.3	2.7	8.0	0.0	0.0	0.0
	245-250	3.0	3.0	0.0	2.7	2.3	0.3	3.7	29.0	15.0	4.3	0.0	0.0	0.0
	195-200	0.0	0.0	0.0	3.0	2.7	0.3	2.7	31.7	6.3	0.3	0.0	0.0	0.0
	145-150	0.3	0.3	0.0	0.3	0.3	0.0	7.7	55.0	12.7	0.7	0.0	0.0	0.0
	95-100	0.7	0.3	0.3	2.3	2.3	0.0	2.0	64.7	6.7	2.3	0.0	0.0	0.0
	45-50	0.3	0.3	0.0	0.7	0.3	0.3	0.3	77.7	0.7	3.0	0.0	0.0	0.0
	0-5	0.0	0.0	0.0	1.0	1.0	0.0	1.3	34.3	9.3	0.0	5.7	35.7	2.0

Table 34. Insoluble residue content, downstream Threadgill Creek segment, Mason and Gillespie Counties, Texas.

Feet above base	Percent residue	Feet above base	Percent residue	Feet above base	Percent residue
875-880	79.2	745-750	7.3	620-625	54.0
870-875	97.4	740-745	7.9	615-620	44.7
865-870	89.0	735-740	7.3	610-615	62.2
855-860	69.7	730-735	4.4	605-610	38.6
850-855	69.3	725-730	6.8	600-605	44.0
845-850	46.3	720-725	5.0	595-600	17.9
840-845	55.3	715-720	7.4	590-595	21.9
835-840	74.9	710-715	5.7	585-590	17.4
830-835	45.1	705-710	8.1	580-585	19.5
825-830	37.7	700-705	9.8	575-580	16.7
820-825	45.6	695-700	4.9	570-575	21.3
815-820	67.6	690-695	14.7	565-570	20.0
810-815	47.7	685-690	20.8	560-565	56.4
805-810	27.2	680-685	4.3	555-560	55.4
800-805	33.6	675-680	6.5	550-555	64.8
795-800	89.1	670-675	14.4	545-550	62.2
790-795	55.5	665-670	19.1	540-545	55.8
785-790	45.9	660-665	26.4	535-540	63.8
780-785	45.2	655-660	13.3	530-535	51.0
775-780	17.3	650-655	24.8	525-530	60.5
770-775	8.3	645-650	34.4	520-525	54.5
765-770	9.2	640-645	52.7	515-520	52.9
760-765	8.2	635-640	57.6	Fault: see section	
755-760	18.7	630-635	56.8	505-510	58.4
750-755	6.4	625-630	46.4	500-505	68.8

Table 34 (continued)

Feet above base	Percent residue	Feet above base	Percent residue	Feet above base	Percent residue
495-500	60.5	365-370	48.9	240-245	90.0
490-495	48.7	360-365	66.0	235-240	96.5
485-490	60.4	355-360	70.4	230-235	96.4
480-485	51.7	350-355	70.7	225-230	95.5
475-480	62.7	345-350	66.4	220-225	97.2
470-475	60.4	340-345	63.5	215-220	98.2
465-470	60.7	335-340	83.3	210-215	97.5
460-465	66.3	330-335	71.4	205-210	97.5
455-460	60.2	325-330	53.9	200-205	96.7
450-455	63.9	320-325	83.4	195-200	97.7
445-450	65.0	315-320	72.7	190-195	97.4
440-445	59.8	310-315	73.4	185-190	98.1
435-440	72.7	305-310	83.8	180-185	97.7
430-435	80.2	300-305	76.6	175-180	94.6
425-430	67.0	295-300	76.9	170-175	95.7
420-425	50.0	290-295	78.6	165-170	98.0
415-420	49.7	285-290	80.8	160-165	96.3
405-410	56.8	280-285	89.7	155-160	96.7
400-405	73.0	275-280	91.5	150-155	96.4
395-400	41.0	270-275	97.0	145-150	96.8
390-395	55.2	265-270	96.7	140-145	97.0
385-390	57.5	260-265	93.6	135-140	97.7
380-385	48.5	255-260	96.6	130-135	98.1
375-380	71.5	250-255	95.8	125-130	97.0
370-375	70.0	245-250	95.5	120-125	98.3

Table 34 (continued)

Feet above base	Percent residue	Feet above base	Percent residue	Feet above base	Percent residue
115-120	98.3	75-80	95.4	35-40	100.0
110-115	97.4	70-75	97.2	30-35	96.4
105-110	97.9	65-70	97.0	25-30	97.4
100-105	98.0	60-65	98.0	20-25	96.4
95-100	97.6	55-60	95.2	15-20	95.7
90-95	97.5	50-55	87.3	10-15	100.0
85-90	97.1	45-50	100.0	5-10	95.5
80-85	97.9	40-45	100.0	0-5	98.2

Squaw Creek Stratigraphic Section, Mason County

The Squaw Creek section is designated as the type section of the Welge Sandstone that is well exposed in a bluff; part of it is even better exposed in a rock fall that has turned the sequence of beds upside down, placing them in an inclined stack similar to a row of pushed over dominoes. One of the best exposures in the Llano region of the Lion Mountain Sandstone Member of the Riley Formation is also in the Squaw Creek section.

The section is slightly more than a quarter mile north of the Gillespie County line. Its top is on the south side of Squaw Creek about 1,700 feet northeast of mile marker 29 on the Gillespie-Mason County line and about 1,200 feet slightly south of west of Lehman's hunting cabin. The base of the section is on the west bank of Squaw Creek about 2,100 feet due north of mile marker 29 and about 2,000 feet slightly north of west from Lehman's hunting cabin (Part 1, Pl. 8, fig. 4).

Thicknesses of units in the Squaw Creek section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Moore Hollow Group (108 feet measured)		
Wilberns Formation (25 feet measured)		
Morgan Creek Limestone Member	3+	105-108
Welge Sandstone Member	22	83-105
Riley Formation (83 feet measured)		
Lion Mountain Sandstone Member	69	14-83
Cap Mountain Limestone Member	14+	0-14

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 108 feet described			
Wilberns Formation: 25 feet described			
Morgan Creek Limestone Member: 3 feet described			
NOTE: From 88.5 to 108 feet, described from toppled block in upside-down sequence.			
1. Limestone--coarse-grained, dark to moderate yellowish-brown, mottled, very sandy, silty, limonitic, somewhat	3	3	105-108

Description	Thickness in feet: Interval	Cumulative	Feet above base
glauconitic, slightly cross-bedded, cross-beds weather in relief, one bed.			
Welge Sandstone Member: 22 feet thick			
2. Sandstone and shale--mostly sandstone, fine-to medium-grained, some 0.25-inch granules in top foot, in part silty and argillaceous; from 83 to 92 and 96 to 105 feet, pale to dark yellowish-orange mottled by pale-olive; from 92 to 96 feet, pale reddish-brown and moderate reddish-brown; grains in part reconstituted, glitter in sunlight; top foot glauconitic, trilobitic, top 2.5 feet somewhat calcareous, cross-bedded, cross-beds brown, weather in relief; beds 0.5 to 6 feet, from top down about 3, 6, 3, 1, 0.5 and 2 feet, followed by 3.5 feet of thinner beds, and a bottom 2.5-foot bed. Shale from 85.6 to 86 and 88.5 to 89 feet, and a 2-inch bed at about 91 feet, pale-olive; fissile, upper surfaces burrowed, shape of burrows preserved by filling from overlying sandstone.	22	25	83-105
Burrows(?) at 86 feet attached to bottom side of a sandstone bed are very numerous, up to about 4 inches long and 1 inch in diameter, local swellings and irregularities cause them to resemble coprolites; a few similar burrows(?) are preserved on under sides of beds at 91, 91.5, and 93 feet; mostly, however, burrows(?) on these surfaces are of a different shape, very numerous, and arranged in geometric patterns, commonly in squares, triangles, pentagons, or as individuals and pairs. An average burrow measures about 0.25 by 1.5 inches and 3/8 inch in depth. Longitudinal ridges are along the bottom of the burrows and, in a few striae, are along the sides, ranging from about 45° in some to nearly vertical in			

Description	Thickness in feet: Interval	Cumulative	Feet above base
others. Many burrows are inclined and where in geometrical designs are inclined outward. These burrows may be related to forms designated as Cruziana.			
A thin section at 91 feet reveals little information about the burrow itself. The rock is sandstone--very fine to coarse grained, matrix yellowish-orange to reddish-orange clay, similar-appearing material in objects up to 3 mm has faint concentric structure; grains quartz, well-rounded to angular, straight to undulatory extinction, grains with bubble trains predominant, some silt, mostly feldspar, in part authigenic, a few phosphatic brachiopod fragments.			
SHIFT downstream about 400 feet along Lion Mountain Sandstone--Welge Sandstone boundary, continue down in section down bluff.			
Riley Formation: 83 feet described Lion Mountain Sandstone Member: 69 feet thick			
3. Greensand, shale, and limestone--greensand much weathered, about equally glauconite and quartz, distinct beds alternate with shale, fissile; limestone very glauconitic, sandy, quartz grains up to 0.1 inch; recessive.	2	27	81-83
4. Greensand and limestone--greensand about equally glauconite and quartz, glauconite dusky-green to dusky yellowish-green, quartz rounded to angular, much reconstituted, cross-bedded; limestone white to pale to medium yellowish-brown, somewhat glauconitic, individual cross-bedded lenses and zones of lenses of trilobite coquinite, more abundant in lower part, a few lenses in upper 8 feet.	26	53	55-81
Numerous phosphatic brachiopods in limestone and in greensand from 55 to 70 feet.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
5. Greensand, limestone, and shale--about 50 percent greensand, fine-grained, about equally glauconite and quartz, silty, argillaceous. Rest mostly limestone, chiefly from 45 to 46 and 53.5 to 55 feet, coarse-grained, white to green depending on glauconite content, cross-bedded, very trilobitic, fairly continuous beds and individual lenses. Shale mostly mottles in fine-grained greensand from 41 to 42, 48 to 50, and 52 to 55 feet; 1 inch of light olive-green fissile shale at base. Hematite concretions at 44 feet. Phosphatic-brachiopods common in hematite concretions and limestone.	14	67	41-55
NOTE: Allowance was made for displacement along a fault that crosses this interval.			
6. Shale, greensand, and limestone--from bottom up as follows: 4 inches greensand, friable, about equally glauconite and quartz, 0.25-inch plates of hematite; 4 inches limestone, light olive-gray, glauconitic, thin-bedded, some light olive-green shale partings; 5 inches intraformational conglomerate, glauconitic, fine-grained pebbles in a medium-to coarse-grained matrix; 9 inches limestone, light olive-green, glauconitic, thin-bedded, some light olive-green shale partings; 14 inches limestone, sandy, silty, glauconitic much reworked by organisms.	3	70	38-41
7. Limestone and greensand--mostly limestone, coarse-grained, white to yellowish-gray, glauconitic, very trilobitic, cross-bedded, beds irregular lenticular; greensand, thin beds at 32 and 37 feet, the latter forms a bench.	7	77	31-38
SHIFT westward across drain, continue down in section.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
8. Limestone, greensand, and shale--from 28 to 29 and 30.5 to 31 feet, limestone, medium- to coarse-grained, very glauconitic, sandy, trilobitic, poorly defined cross-beds, some intraformational conglomerate; from 29 to 30.5 feet, mostly greensand, some trilobitic cross-bedded limestone, a few thin shale films, a layer of hematite concretions at 30 feet, glauconite all somewhat altered as shown by red streak, glauconite weathered from centers of hematite concretions leaving voids.	3	80	28 - 31
Five thin sections at 30 feet of iron oxide nodules and adjacent rock. Thin section 30A, limestone--mostly quartz sand, voids, a few trilobite fragments and intraclasts, and some glauconite in a coarse-grained, calcite mosaic interlaced with hematite; intraclasts fuzzy, granular, contain sand and trilobite debris and in part laced by hematite; quartz sand mostly very fine to medium, grains well-rounded to angular, coated by hematite, straight to undulatory extinction, grains with bubble trains and rutilated grains common; voids probably the former site of glauconite grains, mostly coated, a few entirely filled by hematite, others are filled by optically continuous calcite that transcends the limonitic border; fossil debris strongly replaced by hematite; glauconite slightly bleached, incipiently altered; a few intraclasts of confusedly granular calcite, fine-grained, some trilobite debris. Thin section 30B, limestone--voids and quartz sand, trilobite and pelmatozoan debris and glauconite in a coarse-grained calcite mosaic, voids similar to above except that hematite and limonite coating are much thinner; optically continuous calcite transcends the limonitic coatings outlining original shape of glauconite grains (Pl. 18, fig.4);intraclasts similar to those in			

Description	Thickness in feet: Interval	Cumulative	Feet above base
thin section 30A except that quartz and glauconite are also present. Thin section 30C, limestone--similar to thin sections 30B and 30A except that alteration is somewhere between, many grains have an inner coating of hematite and an outer coating of limonite. Thin section 30D, centered on a hematite nodule--hematite predominates, occupies the former site of glauconite grains and matrix and replaces almost all of the pelmatozoan and trilobite fragments, and possibly replaces some quartz; toward margin of nodule replacement is not quite as complete and a few unfilled voids remain. Thin section 30E, limestone and hematite--limestone similar to that forming intraclasts in 30A and 30B except for some voids and optically continuous calcite grains coated by hematite that occupy sites of former glauconite grains, more abundant trilobite debris, and the absence of glauconite; hematite similar to 30D, except that matrix calcite is incompletely replaced, and for numerous voids formerly occupied by glauconite; a few phosphatic brachiopod fragments; contact between limestone and hematite fairly sharp.			
The steps involved in the change from rock partly replaced by hematite to one mostly replaced by hematite is perhaps even more easily visualized by examining a sawed surface than it is by examining a thin section. Upon viewing a sawed surface it is apparent that the hematite concretions result directly from the destruction of glauconite. Iron derived from the weathering of glauconite migrates to a bedding plane or joint where it is precipitated. Once a center or plane of precipitation is formed, deposition continues with replacement of calcite fossils, calcite matrix, and filling holes left vacant by the removal of glauconite grains during			

Description	Thickness in feet: Interval	Cumulative	Feet above base
weathering. The final result is a compact, elongate, sandy hematite mass surrounded by porous, sandy hematite; the pores produced by the total destruction of glauconite grains. This zone in turn is surrounded by a zone of partly altered glauconite and hematitized calcite, and finally by essentially unaltered and nonhematitized greensand.			
SHIFT downstream about 400 feet along beds; continue down in section down bluff.			
9. Limestone, greensand, sandstone, and shale--(4 inches short of 14 feet) from base upward: 6 inches greensand, about equally coarse glauconite and coarse calcite, some white, trilobite coquinite cross-beds; 6 inches shale, calcareous, silty, very glauconitic, glauconite fine; 4 inches limestone, glauconitic, some trilobite coquinite cross-beds; 7 inches shale, calcareous, silty, very glauconitic, glauconite fine; 7 inches limestone, medium-grained, glauconitic, silty; 10 inches shale, calcareous, silty, a few limestone nodules, 11 inches limestone, medium-to coarse-grained, glauconitic, argillaceous, coarse part trilobitic; 19 inches sandstone and shale, in lower part sandsone, fine-grained, glauconitic, silty, grades upward into shale, calcareous, sandy, silty, recessive; 6 inches limestone, coarse-grained glauconitic; 13 inches shale, silty, glauconitic, recessive; 3 inches greensand, very calcareous, silty, some limestone, coarse-grained; 5 inches shale, brown, fissile; 9 inches shale, silty, glauconitic; 3 inches limestone, medium-grained, very glauconitic; 10 inches shale, silty, calcareous, glauconitic, 18 inches interbedded shale, brown, fissile, more abundant in lower part, in upper part, calcareous, glauconite and silt more abundant; 27 inches sandstone, fine-grained, very glauconitic, argillaceous, silty, in part cross-bedded.	14	94	14-28

Description	Thickness in feet: Interval	Cumulative	Feet above base
Cap Mountain Limestone Member: 14 feet described			
10. Limestone--fine- to medium-grained, grayish-orange to light olive-gray, glauconitic, slightly sandy, silty, sand mostly fine and very fine, sand and silt mostly quartz, much detrital feldspar, oolitic from 4 to 6 feet, irregular objects of dolomite weather in relief, bedding wavy, ledges from top down 2, 1, 1, 2, 1, 6, and 1 feet thick. Cracks filled by limestone extend through interval, fine- to coarse-grained, very glauconitic, silty.	14	108	0 - 14

Table 35. Heavy mineral frequency counts, Squaw Creek section, Mason County, Texas (counts made by T. R. Walker).

Member	Sample Interval (ft)	Zircon				Tourmaline			
		Total	Clear	Zoned	Dusty	Total	Brown	Green	Blue
Welge Sandstone	100-105	11.0	10.3	0.0	0.7	0.7	0.0	0.3	0.0
	85-90	11.3	8.7	0.3	2.3	0.0	0.0	0.0	0.0
Lion Mountain Sandstone	60-65	4.0	3.3	0.0	0.7	0.7	0.3	0.0	0.3
	20-25	3.3	2.0	0.0	1.3	0.3	0.0	0.3	0.0

Member	Sample Interval (ft)	Garnet		Rutile			Other Minerals				
		Total	Colorless	Total	Amber	Foxy red	Anatase	Altered ilmenite	Leucoxene	Black opaques	Pyrite
Welge Sandstone	100-105	0.0	0.0	0.3	0.3	0.0	1.3	53.3	0.0	33.3	0.0
	85-90	0.0	0.0	0.0	0.0	0.0	1.3	31.3	0.7	55.0	0.3
Lion Mountain Sandstone	60-65	0.0	0.0	0.3	0.0	0.3	0.3	23.7	0.3	70.7	0.0
	20-25	0.3	0.3	0.0	0.0	0.0	3.0	12.0	3.0	78.0	0.0

Table 36. Insoluble residue content, Squaw Creek section, Mason County, Texas.

Feet above base	Percent Residue
105-108	40.9
100-105	90.1
95-100	100.0
90-95	93.5
85-90	95.8
83½-85	100.0
80-83½	93.1
75-80	58.1
70-75	68.7
65-70	57.1
60-65	72.5
55-60	63.9
50-55	70.6
45-50	57.2
40-45	73.2
35-40	53.4
30-35	19.5
25-30	87.7
20-25	80.9
14-20	48.2
10-14	14.1
5-10	12.2
0-5	22.8

Pontotoc Stratigraphic Section, Llano and San Saba Counties

The Pontotoc section includes 675 feet of Cambrian rocks extending from near the middle of the Welge Sandstone to the base of the Hickory Sandstone. The lower 265 feet is very poorly exposed and would not have been included except that no section of better exposed Hickory Sandstone was found in the northwestern part of the Llano region. Another reason for measuring the Hickory Sandstone here is to obtain some idea of the topographic relief at the start of Cambrian sedimentation, since a nearby hill of Precambrian Valley Spring Gneiss extends upward into the Cap Mountain Limestone.

Tracing geologic boundaries in the Pontotoc area did not reveal faults of more than a few feet displacement but did reveal many minor fractures. Displacement along the minor fractures, first down on one side on one, and down on the other side on the next, largely cancelled out. Inaccuracies in thickness measurements of the Hickory Sandstone will therefore mostly be from insufficient dip data because of poor exposures. Long covered intervals were crossed, using averages of the few poor dip readings in the vicinity (Part 1, Pl. 7, fig. 9).

Palmer measured most of the fossiliferous part of the Pontotoc section during 1948 and made fossil collections. To be sure that no important faults crossed the line of section, Barnes mapped the area in 1949, and Walker and Barnes added the lower part of the Hickory Sandstone to the section changing Palmer's footages to conform.

Thicknesses of units in the Pontotoc section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Moore Hollow Group (675 feet measured)		
Wilberns Formation (9 feet measured)		
Welge Sandstone Member	9+	666(?) - 675
Riley Formation (666(?) feet)		
Lion Mountain Sandstone Member	26(?)	640 - 666(?)
Cap Mountain Limestone Member	170	470 - 640
Hickory Sandstone Member	470	0 - 470

The top of the Pontotoc section is 2.3 miles due north of Pontotoc, 75 feet west of the old county road, and is now in the right-of-way of Ranch Road 501. The bottom of the section is 1 mile airline east-northeast of the crossroads at Pontotoc and about 1,400 feet slightly north of east of a farm house. The base of the section is about 2-1/8 miles south-southeast from the top of the section, which starts at a fault within the Welge Sandstone.

The bottom of the section is at the head of a gully along a drain west of the main drain at a point 1 mile east-northeast of the cross roads at Pontotoc. It is reached by following the Llano road half a mile eastward and turning north on a lane and farm road about half a mile to a farm house. The bottom of the section is 1,400 feet slightly north of east from the farm house and rests on Precambrian Valley Spring Gneiss, strike N. 40° W., dip 40° NE.

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 675 feet described			
Wilberns Formation: 9 feet described			
Welge Sandstone Member: 9 feet described			
Go down in section southward to fault.			
1. Sandstone--fine to very coarse grained; pale yellowish-orange; grains fairly well-rounded, fairly rough, mostly reconstituted; poorly exposed.	1	1	674-675
2. Covered	3	4	671-674
3. Sandstone--fine to very coarse grained, a few granules; dark yellowish-orange; some glauconite; grains fairly well-rounded, slightly reconstituted; cross-bedded, beds 6 inches to 2 feet thick. A few phosphatic brachiopod fragments.	5	9	666-671
Riley Formation: 666(?) feet thick			
Lion Mountain Sandstone Member: 26(?) feet thick			
4. Shale--olive-green, glauconitic, sandy.	1	10	665-666
5. Covered	3	13	662-665
6. Sandstone and limestone--sandstone medium to very coarse grained, at 659 feet, 0.25 inch quartz grains; weathers brown; glauconitic; bottom bed 3 feet thick, rest mostly a foot or less in thickness separated by thinner friable beds; from 653 to 656 feet, a	9	22	653-662

Description	Thickness in feet: Interval	Cumulative	Feet above base
few limestone cross-beds of trilobite coquinite. Fossils collected from 655 feet, Aphelaspis walcotti Resser and Angulotreta triangularis Palmer.			
7. Greensand and limestone--greensand medium-grained, less than half glauconite; limestone very coarse-grained trilobite coquinite, glauconitic, sandy, grains fine to very coarse, some granules, strongly reconstituted. Fossils collected from 650 feet, Aphelaspis walcotti Resser, Aphelaspis conveximarginata (Palmer), and Pseudagnostus josephus Hall; from 652 feet, Aphelaspis walcotti Resser and Angulotreta triangularis Palmer.	6	28	647-653
SHIFT 500 feet southeastward across a fault to the base of the Cretaceous. Some section may be missing, but numbering is continued as if section were uninterrupted. Continue down in section in a westward direction. Below 640 feet, slope steepens.			
8. Limestone and greensand(?)--limestone very coarse-grained cross-beds of trilobite coquinite; slightly sandy, sand fine to medium; glauconitic; loose slabs probably weathering out of greensand. Fossils collected from 647 feet, Aphelaspis walcotti Resser, Glaphyraspis ornata (Lochman), Angulotreta triangularis digitalis Palmer, and spicule type C.	7	35	640-647
Cap Mountain Limestone Member: 170 feet thick			
9. Limestone and greensand(?)--mostly limestone fine- to coarse-grained, glauconitic, sandy, sand fine to very coarse, coarser upward, grains well rounded, mostly rough, a few smooth, mostly	24	59	616-640

Description	Thickness in feet: Interval	Cumulative	Feet above base
trilobitic; recessive, poorly exposed intervals may be greensand.			
From 616 to 617 feet, covered; from 617 to 619 feet, limestone fine-grained, mottled greenish-gray and yellowish-brown; from 619 to 621 feet, limestone coarse-grained; from 621 to 622 feet, greensand; from 622 to 624 feet, limestone fine- to coarse-grained, greenish-gray to moderate-brown; from 624 to 625 feet, covered; from 625 to 629 feet, limestone coarse-grained, cross-bedded, olive-gray to pale to dark yellowish-brown; from 629 to 630 feet, covered; from 630 to 632 feet, limestone coarse-grained, greenish-gray to yellowish-brown, mottled; from 632 to 634 feet, covered; from 634 to 640 feet, limestone coarse-grained, very sandy, cross-bedded, weathers into lenticular plates some of which are trilobite coquinite.			
Fossils collected from 618 feet, *Coosia* cf. *C. albertensis* Resser, *Meteoraspis* cf. *M. loisi* Lochman, and *Coosina* cf. *C. ariston* (Walcott); from 622 feet, *Coosina* cf. *C. ariston* (Walcott) and *Tricrepicephalus thoosa* (Walcott); from 636 feet, *Aphelaspis walcotti* Resser; from 638 feet, *Aphelaspis spinosa* Palmer; from 639 feet, *Aphelaspis walcotti* Resser and *Cheilocephalus breviloba* (Walcott).			
10. Limestone--very coarse grained, some medium-grained; pale-brown to grayish-brown, olive-gray, greenish-gray mottled and streaked by white and light greenish-gray, and dark yellowish-brown; sandy, grains fine to coarse, in part well-rounded,	14	73	602-616

Description	Thickness in feet: Interval	Cumulative	Feet above base
polished, in part reconstituted; very glauconitic; beds mostly 6 to 18 inches. Fossils collected from 604 feet, Crepicephalus australis Palmer; from 609 feet, Crepicephalus australis Palmer, and Tricrepicephalus sp.			
SHIFT 1,500 feet southward corssing abandoned road using a prominent glauconitic limestone at 613 feet in section to make most of the shift and a combination of beds beneath to finish it. Continue down in section westward to Ranch Road 501.			
11. Limestone--granular; moderate yellowish-brown to pale yellowish-brown, sandy beds mostly moderate-brown, some beds in upper part dark yellowish-brown; mottled, mottles have faint concentric structure and may be pisolites; sandy beds alternate with silty beds; some glauconite; sand very fine to medium, mostly well-rounded, polished, some angular in lower part, sand in moderate-brown beds has bronzy luster from coating of iron oxide; stylolites common in upper part. Fossils collected from 594 feet, Coosella cf. C. widnerensis (Resser) and Kinsabia variegata Lochman; from 602 feet, Coosia cf. C. albertensis Resser, Crepicephalus australis Palmer, Llanoaspis undulata Lochman, and Opisthotreta depressa Palmer.	19	92	583-602
12. Limestone--fine- to medium-grained, grayish-orange to moderate yellowish-brown to light olive-gray, in part mottled, silty, in part sandy, glauconitic, micaceous, distinctly bedded, beds 2 to 8 inches thick.	13	105	570-583

Description	Thickness in feet: Interval	Cumulative	Feet above base
CONTINUE down in section along east ditch of abandoned road.			
13. Limestone and siltstone--moderate-brown to pale yellowish-brown, slightly lighter colored in upper part; bedding in part distinct, in part mostly destroyed by burrowing organisms causing subdued mottling, beds average about 4 inches; some glauconite above 552 feet.	85	190	485-570
From 485 to 500 feet, siltstone, very argillaceous, calcareous and limonitic, fine sand very abundant near middle, micaceous, a few tiny specks of glauconite; from 500 to 515 feet, similar siltstone, some granular limestone; from 515 to 520 feet, similar siltstone and limestone, thin-bedded, recessive; from 520 to 525 feet, siltstone, calcareous, micaceous; from 525 to 531 feet, similar siltstone and limestone, thin-bedded, recessive; from 520 to 525 feet, siltstone, calcareous, micaceous; from 525 to 531 feet, siltstone, some granular limestone, distinctly bedded; from 531 to 532 feet, limestone medium-grained, light olive-gray; from 532 to 555 feet, siltstone and limestone, micaceous, limonitic, numerous tiny glauconite grains, some red sandstone from 545 to 550 feet; from 555 to 570 feet, limestone granular, a few beds fairly pure, gray, mostly silty ranging to siltstone, glauconitic, micaceous, distinctly bedded.			
Fossils collected from 541 feet, *Coosella beltensis* Lochman and *Kinsabia variegata* Lochman; from 544 feet, *Paterina* sp.; from 549 to 550 feet, trilobites; from 555 to 560 feet, trilobites and phosphatic brachiopods.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
14. Limestone--granular verging on sandstone, mottled pale yellowish-brown and moderate yellowish-brown, very silty; sand very fine to coarse; distinctly bedded, beds average 1 foot from 474 to 480 feet, rest of interval about 4 inches.	11	201	474-485
15. Sandstone--lower half fine-grained, moderate yellowish-brown; upper half medium- to coarse-grained, moderate-brown; calcareous.	4	205	470-474
Phosphatic brachiopods abundant in upper 2 feet.			
The top of the Hickory Sandstone is arbitrarily placed at 470 feet on the basis of downward disappearance of significant calcareous content.			
Hickory Sandstone Member: 470 feet thick			
16. Sandstone--fine to very coarse grained; alternating zones of massive, very dusky red and less massive intervals with dark brown specks in a matrix of various shades of very light brown, disturbed by organisms; grains mostly well to very well rounded, mostly polished, less well polished from 445 to 455 feet; mostly calcareous.	38	243	432-470
From 432 to 436 feet, fine to very fine grained, some larger grains, moderate yellowish-brown to grayish-orange and very pale orange, some very dusky red near bottom, non-calcareous; from 436 to 439 feet, fine to very coarse grained, a few granules, very dusky red, mudballs common; from 439 to 440 feet, fine grained; grayish-orange to dark yellowish-orange; from 440 to 445 feet, medium to very coarse grained;			

Description	Thickness in feet: Interval	Cumulative	Feet above base
from 445 to 470 feet, fine to very coarse grained, very dusky red, massive, upper 10 feet weathers into thin plates. Phosphatic brachiopods abundant at many levels; trilobite fragments in lower 2 feet.			
17. Shale--pale-red, fissile, sandy.	1	244	431-432
SHIFT to west road ditch, continue down in section.			
18. Sandstone--fine to very coarse grained; alternating zones of very dusky red and dark yellowish-brown to moderate-brown from iron oxide; grains well to very well rounded, polished; calcareous. From 395 to 405 feet very dusky red, minor shale near bottom; from 405 to 406 feet, moderate-brown; from 406 to 409 feet, fine-grained, light yellowish-brown, silty, slightly micaceous, thin-bedded, from 409 to 412 feet, very dusky red; from 412 to 414 feet, fine-grained, some larger grains, silty, pale to dark yellowish-brown, thin-bedded; from 414 to 424 feet, very dusky red, a dark-brown bed at 417 feet; from 424 to 426 feet, pale-brown, partly covered; from 426 to 430 feet, very dusky red, mud-ball-like objects common; from 430 to 431 feet, pale yellowish-brown. Fossils collected from 395 and 425 feet, *Cedarina cordillerae* (Howell and Duncan) and *Kormagnostus simplex* Resser; phosphatic brachiopods many of which are fragmental and worn from 399 to 400, 402 to 406, 409 to 412, 414 to 424, and 426 to 430 feet.	36	280	395-431

Description	Thickness in feet: Interval	Cumulative	Feet above base
Leave road ditch and go down in section southwestward toward drain.			
19. Sandstone--fine- to coarse-grained, grains well to very well rounded, polished, abundant iron oxide, calcareous; from 386 to 388 and from 391 to 395 feet, very dusky red to blackish-red, cross-bedded; from 388 to 391 feet, dark yellowish-brown. Worn fragments of phosphatic brachiopods common.	9	289	386-395
20. Sandstone and shale--sandstone mostly fine and very fine grained ranging to some very coarse grained, light-brown, grains fairly well to well rounded, some polished, slightly calcareous, argillaceous, beds up to 6 inches; alternates with shale pale-brown, some dusky-red, weathers with a purplish tint, trails common. Fossils collected from 385 feet, Cedarina cordillerae (Howell and Duncan).	6	295	380-386
Section enters drain; continue down in section mostly on west side of drain.			
21. Sandstone, shale, and covered--sandstone fine to very coarse grained; very dusky red to light brown from iron oxide; grains fairly well to well rounded, a few polished; slightly calcareous from 340 to 361 and 366 to 385 feet; some intraformational conglomerate. From 348 to 356 feet, beds up to 2 feet; from 356 to 357 feet, covered; from 357 to 362 feet, silty, very argillaceous, slightly micaceous, thick-bedded; from 362 to 364 feet,	32	327	348-380

Description	Thickness in feet: Interval	Cumulative	Feet above base
covered; from 364 to 365 feet, intraformational conglomerate; from 365 to 370 feet, sandstone beds up to 6 inches thick alternating with shaly zones, some intraformational conglomerate, poorly exposed; (cross fence); top 10 feet sandstone with numerous grains of granule size, mostly light-brown, cross-bedded, beds up to 2 feet. Fossils collected from 350 feet, *Cedarina cordillerae* (Howell and Duncan); from 354 feet, *Bolaspidella* sp. and *Modocia centralis* (Whitfield); phosphatic brachiopods at many levels.			
SHIFT downstream about 60 feet and continue down in section on bluff.			
22. Sandstone--fine to very coarse grained; very dusky red to light brown from iron oxide; grains fairly well to very well rounded, a few polished; beds up to 1 foot thick alternate with thinner bedded zones, trails common on bedding surfaces; some shale in upper part. Some phosphatic brachiopod fragments.	8	335	340-348
SHIFT downstream about 60 feet and continue down in section along bluff on west bank of drain.			
23. Sandstone and shale--sandstone in upper 5 feet very fine to very coarse grained, argillaceous, glauconitic, grains fairly well-rounded; from 335 to 337 feet, light reddish-brown, with dusky-red shale films; from 337 to 339 feet, moderate-brown to moderate	15	350	325-340

Description	Thickness in feet: Interval	Cumulative	Feet above base
yellowish-brown, one bed, some intraformational conglomerate; from 339 to 340 feet, yellowish-brown, beds about 4 inches thick; sandstone in middle 5 feet, fine to very coarse grained, numerous granules and small pebbles mostly dark yellowish-orange to light brown; from 334 to 335 feet, light to moderate brown, pebbles angular rough, other grains fairly well rounded, in part argillaceous, slightly glauconitic, from 330 to 331 feet and near middle, intraformational conglomerate; from 331 to 334 feet, shale dusky red, as films between sandstone beds; from 325 to 326 and from 327 to 328 feet, thin-bedded, much fissile shale; from 329 to 330 feet, shale pale brown.			
Fossils collected from 326 feet, Bolaspidella burnetensis (Walcott).			
Phosphatic brachiopods mostly in intraformational conglomerate at 329 feet, from 330 to 331 feet, and at 333, 334, and 338 feet.			
SHIFT downstream about 100 feet and continue down in section along east bank of drain.			
24. Sandstone, siltstone, and shale--sandstone very fine to very coarse grained, in part grades to siltstone, iron-stained, argillaceous, slightly glauconitic, grains fairly well rounded, beds less than 6 inches, upper 2 feet mostly sandstone; shale weathers dusky red, forms thin films between sandstone beds, trails and burrows common.	10	360	316-325
Fossils collected from 320 feet, Bolaspidella burnetensis (Walcott).			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Phosphatic brachiopods common.			
SHIFT across small fault and downstream about 100 feet; continue down in section along east bank.			
25. Sandstone, siltstone, and shale--sandstone mostly very fine grained grading to siltstone, a scattering of coarser grains, grayish-orange, many 0.25-inch concretions, argillaceous, slightly glauconitic, thinly bedded, an upper 3-foot ledge and an 8-inch ledge; lower 6 inches shale, a few burrows.	4	364	311-315
SHIFT westward 100 feet to west branch of drain and continue section down east bank of drain.			
26. Sandstone and shale--mostly sandstone fine to very coarse grained, many granules and small pebbles in upper part, very fine sandstone and siltstone in lower part, dusky-yellow to dark yellowish-brown, argillaceous, slightly glauconitic, massive, beds up to 2 feet thick; shale greenish-gray interbeds in lower 2 feet, bedding plane films in rest of interval, a few burrows.	11	375	300-311
A few phosphatic brachiopods.			
SHIFT across small fault and across stream to west bank; continue down in section along west bank.			
27. Sandstone--fine to very coarse grained, some small quartz and sandstone pebbles in upper part; dusky-yellow to dark yellowish-brown; mostly quartz, microcline scarce, in part glauconitic; grains mostly fairly well rounded, a few well-rounded, polished; massive beds up to 3 feet.	8	383	292-300

Description	Thickness in feet: Interval	Cumulative	Feet above base
Phosphatic brachiopods at several levels.			
28. Covered	2	385	290-292
29. Sandstone and shale--sandstone in lower 4 feet, fine to very coarse grained, many granules, a few small pebbles, moderate yellowish-brown, argillaceous, some glauconite, grains mostly fairly well rounded, a few well-rounded, massive, cross-bedded, intraformational conglomerate at top; from 279 to 284 feet, upper foot mostly shale light brownish-gray to purplish, rest sandstone fine to very coarse grained, argillaceous, slightly glauconitic, some siltstone, a few beds with trails on them, intraformational conglomerate in beds up to 4 inches; in upper 6 feet, sandstone, fine to very coarse grained, dark yellowish-orange, argillaceous, slightly micaceous and glauconitic, grains fairly well-rounded, lower half massive, cross-bedded; upper half alternating shale, siltstone, and sandstone, cross-bedded, beds up to 6 inches.	15	400	275-290
Fossils collected from 279 feet, Bolaspidella wellsvillensis (Lochman and Denson); phosphatic brachiopods in intraformational conglomerate from 279 to 284 feet.			
SHIFT along base of cross-bedded sandstone downstream about 250 feet and continue down in section on bluff to drain bottom.			
30. Sandstone and shale--sandstone very fine to very coarse grained, mottled in various browns and yellowish-grays, grains fairly well-rounded, mostly quartz,	10	410	265-275

Description	Thickness in feet: Interval	Cumulative	Feet above base
glauconite scarce, thin-bedded, recessive, intraformational conglomerate abundant in lower half and upper 1.5 feet; shale beds in upper part greenish-gray.			
Abundant phosphatic brachiopods in intraformational conglomerate.			
SHIFT about 1,700 feet downstream and continue down in section along south side of drain.			
31. Sandstone and shale--most sandstone and intraformational conglomerate mottled in browns and yellowish-grays; some shale.	1	411	264-265
Phosphatic brachiopods in intraformational conglomerate.			
SHIFT downstream about 400 feet and continue down in section down low declivity.			
32. Sandstone and shale--sandstone fine to very coarse grained, a few granules, argillaceous, glauconite common, grains fairly well-rounded; lower 1.5 feet somewhat cross-bedded, beds about 4 inches; next 2 feet thin-bedded with trails common on bedding surfaces, thin shale laminae; upper 1.5 feet medium- to coarse-grained, hard, somewhat hematitic, quartz fragments up to 0.5 inch.	5	416	259-264
Phosphatic brachiopods common in upper 1.5 feet.			
SHIFT downstream 150 feet across covered interval crossing fence.			
33. Covered	8	424	251-259
34. Sandstone--very fine to coarse grained; argillaceous; upper part hematitic, one bed; lower part thin-bedded, conglomeratic with a few	1	425	250-251

Description	Thickness in feet: Interval	Cumulative	Feet above base
well-rounded quartz pebbles up to 2.5 inches, many grains 0.25 inch in size.			
Numerous phosphatic brachiopods.			
SHIFT downstream about 100 feet and continue down in section along east bank.			
35. Sandstone and shale--sandstone fine to very coarse grained, silty, mostly thin beds separated by shale laminae, top 6 inches hematitic, another bed 6 inches lower also hematitic, mottles and trails common.	2	427	248-250
Phosphatic brachiopods in hematitic part.			
SHIFT downstream about 200 feet and continue down in section along north bank.			
36. Covered.	5	432	243-248
37. Sandstone and shale--sandstone very fine to very coarse grained, a few granules; light olive-gray to dark yellowish-orange, some light-brown; argillaceous; most quartz, grains fairly well-rounded, some reconstitution; lower 3.5 feet mostly sandstone thin-bedded, some lenticular cross-beds up to 6 inches, shale beds and partings up to 1 inch; next foot sandstone, one set of cross-beds; next 2 feet thin-bedded, recessive; top 6 inches sandstone, one set of cross-beds.	7	439	236-243
38. Covered	1	440	235-236
39. Sandstone and shale--sandstone very fine to medium grained, a few coarse grains, silty, argillaceous, micaceous, in part calcitic with calcite poikilitic, mostly thin-bedded alternating with shale as	7	447	228-235

Description	Thickness in feet: Interval	Cumulative	Feet above base
partings and beds up to an inch in thickness, top foot essentially one bed, trails and burrows common. Some phosphatic brachiopod fragments.			
SHIFT about 500 feet across fence and continue down in section along south bank.			
40. Sandstone--very fine to very coarse grained, a few granules, grayish-yellow to yellowish-orange, in part argillaceous, mostly quartz, grains fairly well-rounded, bottom part nodular perhaps from burrows, next 2 feet thin-bedded with shale partings, top part thick-bedded.	5	452	223-228
SHIFT downstream about 800 feet across covered interval and continue down in section.			
41. Covered	28	480	195-223
42. Sandstone--very fine to very coarse grained; yellowish-brown to yellowish-gray; mostly quartz, some microcline up to granule size; grains fairly well-rounded; beds in lower foot 4 inches, next 2 feet one bed, upper 2-feet beds about 6 inches.	5	485	190-195
SHIFT downstream about 600 feet across covered interval and continue down in section.			
43. Covered	7	492	183-190
44. Sandstone--medium- to coarse-grained, yellowish-brown, cross-bedded, massive with thin-bedded zone near middle, a few small concretionary objects on weathered surface.	2	494	181-183
45. Covered	11	505	170-181

Description	Thickness in feet: Interval	Cumulative	Feet above base
SHIFT east-southeastward about 1,000 feet to side drain. This shift was made across a covered area, and it is hoped that the beds measured before and after the shift match.			
46. Sandstone--fine to very coarse grained, a few granules, some very fine grained, argillaceous in lower part, mostly quartz, some microcline up to granule size, micaceous, grains fairly well-rounded, alternating thick- and thin-bedded zones.	10	515	160-170
Before the shift 9 feet of section is exposed as follows: from 161 to 164 feet, massive; from 164 to 165 feet thin-bedded; from 165 to 166 feet, one bed, from 166 to 167 feet, thin-bedded; from 167 to 169 feet, one bed; from 169 to 170 feet, with hackly fracture, contains coarse quartz fragments.			
After the shift 10 feet of section is exposed as follows: from 160 to 162 feet, thick-bedded; from 162 to 164 feet, thin-bedded; from 164 to 166 feet, thick-bedded; from 166 to 168 feet, thin-bedded; from 168 to 170 feet, thick-bedded, a zone of coarse quartz fragments near middle.			
47. Covered	3	518	157-160
48. Sandstone--fine- to coarse-grained, a few very coarse grains and granules some of which are microcline; some mica; grains fairly well-rounded; lower 2 feet one bed with cuneiform markings on upper surface, next 3 feet thin-bedded, top 2 feet massive, poorly exposed.	7	525	150-157

Description	Thickness in feet: Interval	Cumulative	Feet above base
A fault at 150 feet downthrown to the north is believed to be of slight displacement and has been disregarded.			
49. Sandstone--fine to very coarse grained, angular quartz fragments up to 1 inch in length and microcline cleavage fragments up to 0.25 inch in size; a thin argillaceous zone near middle, fine to very fine grained, micaceous.	2	527	148-150
50. Covered	2	529	146-148
51. Sandstone and shale--sandstone yellowish-gray to brownish-yellow, a bed at 144 feet moderate reddish-brown, in part cross-bedded, cuneiform markings common in thicker sandstone beds; shale occurs as thin films.	18	547	128-146
From 128 to 130 feet, sandstone fine to very coarse grained, many granules, mostly quartz, some microcline, grains fairly well-rounded, essentially one set of cross-beds; from 130 to 136 feet, sandstone very fine to very coarse grained, a few granules, mostly quartz, much microcline in finer grain sizes, mica scarce, grains fairly well-rounded, lower 2 feet beds 4 to 8 inches, next foot beds 1 inch and less with shale partings, next foot one set of cross-beds thickening eastward, top 2 feet 4- to 8-inch sets of cross-beds with ripple marks on surface at 135 feet; from 136 to 140 feet, mostly fine and very fine grained, a few coarse and very coarse grains, mostly quartz, some microcline, a few flakes of mica, alternating 4- to 6-inch sets of cross-beds and thin-bedded zones of sandstone with shale partings;			

Description	Thickness in feet: Interval	Cumulative	Feet above base
from 140 to 141 feet, one set of cross-beds; from 141 to 146 feet, sandstone beds 4 to 6 inches, alternate with thin-bedded intervals of sandstone with shale partings.			
52. Covered	13	560	115-128
SHIFT downstream about 200 feet to main drain and continue down in section.			
53. Sandstone--very fine to very coarse grained, a few granules; yellowish-gray to brownish-yellow, some pink, silty, argillaceous, micaceous in upper 5 feet; mostly quartz; grains fairly well-rounded; much cross-bedded, bottom 5 feet one massive set of cross beds, rest of interval cross-bed sets mostly less than 18 inches in thickness.	15	575	100-115
SHIFT downstream about 100 feet and continue down in section along west bank.			
54. Sandstone--fine to very coarse grained, a few granules; yellowish-gray; mostly quartz, some microcline and mica; grains fairly well rounded; massive, bedding indistinct.	7	582	93-100
SHIFT downstream about 200 feet and continue down in section along east bank.			
55. Sandstone--fine to very coarse grained, a few granules; mostly quartz, some microcline, mica scarce; grains fairly well rounded, some limonite cement; cross bedded, beds average about 1 foot.	5	587	88-93
56. Covered	24	611	64-88
SHIFT downstream across covered interval about 950 feet and continue down in section along east bank.			
57. Sandstone--mostly medium to coarse, some fine grained, a few granules;	17	628	47-64

Description	Thickness in feet: Interval	Cumulative	Feet above base
mostly quartz, some microcline and mica; grains fairly well-rounded; in part argillaceous; cross-bedded, massive, little indication of bedding except in lower foot.			
SHIFT south across fault and continue down in section.			
58. Sandstone and shale--sandstone yellowish-brown to yellowish-gray, argillaceous, somewhat micaceous, cuneiform markings common in some beds, beds 4 inches and less alternate with shale, light olive-gray to pale-red, somewhat sandy, thin beds. From 34 to 35 feet, sandstone, fine- to coarse-grained, a few granules, mostly quartz, about 20 percent microcline, some mica, smaller grains angular, some rounding, larger ones fairly well-rounded, beds about 4 inches; from 35 to 38 feet, sandstone, very fine to granule size, micaceous, some microcline, much silt and clay, bedding indistinct, weathers with a rough surface; from 38 to 47 feet, alternating sandstone and shale, thinly bedded, sand very fine to very coarse, somewhat rounded, mostly quartz, some microcline, weathered biotite, and muscovite.	13	641	34-47
SHIFT across small fault and continue down in section along east bank.			
59. Covered	6	647	28-34
60. Sandstone--fine- to coarse-grained, yellowish-brown, about equally quartz and microcline, micaceous, grains mostly angular, a few of quartz slightly rounded, one bed with a peculiar vertical structure and some indication of cuneiform markings on top surface.	1	648	27-28
61. Covered	19	667	8-27

Description	Thickness in feet: Interval	Cumulative	Feet above base
SHIFT southwestward about 450 feet to a side drain and continue down in section.			
62. Sandstone and conglomerate--from 0 to 3 feet, angular conglomerate mostly 0.75-inch fragments of quartz up to 2 inches in a matrix of fine- to coarse-grained, angular, micaceous sand, an upper 1-foot and a lower 2-foot bed; from 3 to 4 feet, brown sandstone, micaceous, a peculiar vertical structure; from 4 to 6 feet, angular conglomerate, fragments smaller than in bottom 3 feet; from 6 to 8 feet, sandstone medium-grained; brown, grains angular, micaceous, a peculiar vertical structure, markings on upper surface indistinctly cuneiform; from 3 to 8 feet beds 6 to 12 inches.	8	675	0-8
Little indication of organisms was seen in the lower 200 feet of the Hickory Sandstone in the line of section, but in the basal few feet of Hickory Sandstone 2,800 feet west-southwest of the base of the section, burrowed sandstone and shale are present, and some of the sandstone slabs have Cruziana on the bottom surface.			

Table 37. Heavy mineral frequency counts, Pontotoc section, San Saba and Llano Counties, Texas (counts made by T. R. Walker).

Member	Sample Interval	Zircon					Tourmaline			
		Total	Clear	Zoned	Dusty	Malacon	Total	Brown	Green	Black
Welge Sandstone	695-700	9.0	6.0	0.7	2.3	0.0	0.0	0.0	0.0	0.0
Lion Mountain Sandstone	680-685	5.3	3.7	0.3	1.3	0.0	0.0	0.0	0.0	0.0
Cap Mountain Limestone	595-600	4.3	2.7	0.3	1.3	0.0	0.0	0.0	0.0	0.0
	545-550	5.0	3.0	0.0	2.0	0.0	0.3	0.3	0.0	0.0
	495-500	15.3	10.7	0.7	4.0	0.0	1.0	0.0	1.0	0.0
Hickory Sandstone	445-450	42.3	25.0	0.3	17.0	0.0	0.3	0.0	0.3	0.0
	395-400	34.3	21.0	0.7	12.7	0.0	0.7	0.0	0.7	0.0
	345-350	25.3	15.7	0.0	9.7	0.0	1.0	0.7	0.3	0.0
	295-300	23.7	15.7	0.3	7.0	0.7	2.3	1.0	1.0	0.3
	245-250	27.0	14.7	0.0	11.0	1.3	3.7	1.3	2.3	0.0
	190-195	36.3	19.0	1.3	16.0	0.0	5.7	1.0	4.7	0.0
	145-150	38.0	24.3	1.0	11.3	1.3	5.7	2.7	3.0	0.0
	95-100	29.3	16.0	2.0	11.3	0.0	10.3	5.3	5.0	0.0
	45-50	28.3	17.3	3.3	7.7	0.0	3.3	1.0	2.3	0.0
	0-5	15.3	8.7	0.3	6.0	0.3	1.0	0.3	0.7	0.0

Table 37
(continued)

Member	Sample Interval	Garnet			Rutile			Other Minerals			
		Total	Colorless	Pink	Total	Amber	Foxy Red	Anatase	Altered ilmenite	Leucoxene	Black opaques
Welge Sandstone	695-700	0.0	0.0	0.0	1.0	1.0	0.0	1.7	40.3	1.0	47.0
Lion Mountain Sandstone	680-685	0.3	0.3	0.0	0.3	0.3	0.0	0.0	44.7	0.7	48.7
Cap Mountain Limestone	595-600	0.0	0.0	0.0	0.3	0.3	0.0	4.0	47.3	18.0	26.0
	545-550	0.0	0.0	0.0	0.3	0.3	0.0	21.0	3.7	69.0	0.7
	495-500	0.3	0.3	0.0	0.0	0.0	0.0	28.0	26.7	24.3	4.3
Hickory Sandstone	445-450	0.3	0.3	0.0	0.3	0.3	0.0	0.0	29.3	1.7	25.7
	395-400	0.7	0.7	0.0	0.7	0.7	0.0	0.3	58.3	1.0	4.0
	345-350	1.3	1.0	0.3	0.0	0.0	0.0	0.7	42.3	5.0	24.3
	295-300	0.7	0.7	0.0	1.0	1.0	0.0	1.3	38.3	5.0	27.7
	245-250	1.0	1.0	0.0	1.3	1.0	0.3	0.0	51.3	8.7	7.0
	190-195	4.3	3.7	0.7	1.7	1.7	0.0	1.0	35.7	9.3	4.3
	145-150	3.0	1.7	1.3	2.0	2.0	0.0	2.3	26.0	22.3	0.0
	95-100	1.0	0.7	0.3	5.7	3.7	2.0	6.0	31.3	13.7	2.3
	45-50	2.0	2.0	0.0	2.7	2.3	0.3	9.0	10.3	42.7	1.7
	0-5	4.3	3.3	1.0	1.0	1.0	0.0	1.3	36.0	24.3	16.7

Table 38. Insoluble residue content, Pontotoc section, San Saba and Llano Counties, Texas.

Feet above bottom of section	Insoluble residue in percent	Feet above bottom of section	Insoluble residue in percent	Feet above bottom of section	Insoluble residue in percent
670-675	99.4	555-560	64.6	440-445	95.8
665-670	96.3	550-555	52.3	435-440	97.3
660-665	95.4	545-550	66.9	430-435	88.8
655-660	88.4	540-545	49.1	425-430	80.8
650-655	90.1	535-540	71.4	423-427	76.8
647-650	15.8	530-535	77.3	418-423	79.3
640-647	6.5	525-530	74.8	413-418	80.3
635-640	44.8	520-525	80.7	409-413	78.3
630-635	34.0	515-520	64.1	405-409	82.5
625-630	35.6	510-515	56.8	400-405	75.3
620-625	36.5	505-510	62.1	395-400	86.2
615-620	35.6	500-505	62.8	390-395	86.3
610-615	31.3	495-500	61.6	385-390	91.6
605-610	37.9	490-495	64.2	380-385	93.2
600-605	38.1	485-490	58.9	374-380	87.0
595-600	38.1	480-485	44.7	370-374	92.6
590-595	39.8	475-480	64.4	366-370	98.0
585-590	56.4	470-475	53.7	363-366	87.9
580-585	44.0	465-470	73.5	356-361	89.4
575-580	45.3	460-465	79.5	351-356	90.1
570-575	44.6	455-460	80.3	346-351	91.3
565-570	47.1	450-455	89.3	340-346	94.0
560-565	54.4	445-450	92.1	335-340	95.8

Table 38
(continued)

Feet above bottom of section	Insoluble residue in percent	Feet above bottom of section	Insoluble residue in percent	Feet above bottom of section	Insoluble residue in percent
330-335	85.1	240-243½	95.3	110-115	99.8
325-330	90.8	236-240	94.8	105-110	98.7
320-325	92.8	230-235	92.6	100-105	99.9
314-320	86.4	225-230	97.0	95-100	99.8
309-314	90.1	223-225	95.6	90-95	99.8
304-309	86.5	190-194	95.3	88-90	98.8
299-304	82.1	170-173½	93.6	60-64	95.6
294-299	97.5	165-170	95.1	55-60	98.8
290-294	93.3	161-165	96.3	50-55	99.7
282-287	96.8	162-165	95.2	45-50	99.2
277-282	95.7	155-156	98.2	40-45	99.8
275-280	90.5	150-155	98.9	35-37½	99.0
271-275	90.6	145-150	98.7	34-35	99.4
265-270	84.1	140-145	99.6	27-28	91.2
260-265	91.0	135-140	99.8	24-25	90.8
255-256	85.7	130-135	98.4	5-10	98.3
250-255	92.3	128-130	99.8	0-5	98.5
248-250	91.1	115-120	99.7		

Taylor Ranch Stratigraphic Section, San Saba County

The Taylor Ranch section is about 5 miles northeast of Pontotoc, San Saba County. The top of the section is about 3,000 feet north-northwest of the intersection of the Cherokee-Pontotoc road and the road to the Taylor Ranch headquarters and about 1,000 feet east of the road to the Taylor Ranch headquarters. The bottom of the section is about the same distance but in the opposite direction from the intersection (Part 1, Pl. 7, fig. 10).

The Taylor Ranch section was measured and described by Bell during the summer of 1954 as part of a Humble Oil and Refining Company program; he was assisted by S. W. Bishop, W. J. McBride, and J. J. Purzer. The fossil lists were updated by Bell during June 1968. Thicknesses of units in the Taylor Ranch section are as follows:

Stratigraphic Unit	Thickness (feet)	Position above base of section (feet)
Moore Hollow Group (443 feet measured)		
Wilberns Formation (228 feet measured)		
Point Peak Member	77+	366-443
Morgan Creek Limestone Member	126	240-366
Welge Sandstone Member	25	215-240
Riley Formation (215 feet measured)		
Lion Mountain Sandstone Member	50	165-215
Cap Mountain Limestone Member	165	0-165

Description of Section:

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 443 feet described			
Wilberns Formation: 228 feet described			
Point Peak Member: 77 feet described			
1. Covered, siltstone and limestone--mostly covered. Siltstone gray, weathers gray, calcareous, thin-bedded. Limestone in part medium- to coarse-grained, gray, weathers gray, glauconitic, thin-bedded, fossiliferous; in part fine-grained, gray, weathers greenish-gray and tan, silty, glauconitic, thin-bedded; in part intraformational conglomerate, fine-grained, greenish-gray, tan, weathers mottled-gray and tan, silty; glauconitic; limonitic; flat pebbles up to 2 inches in size, forms ledges.	77	77	366-443

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Bell from 443 feet, Billingsella corrugata inornata Ellinwood and Plectotrophia alata (Walcott).			
Morgan Creek Limestone Member: 126 feet thick			
2. Limestone and covered--mostly covered. Limestone in part coarse-grained, cream and white, weathers gray, glauconitic, thin-bedded, some coquinite lenses; in part fine-grained, gray, weathers gray, thin- to medium-bedded, slightly fossiliferous; stromatolitic bioherms from 338 to 339 and 344 to 345 feet.	66	143	300-366
Fossils collected by Bell from 300.5 feet, Orygmaspis llanoensis (Walcott), Wilbernia halli Resser, var. A. Ellinwood, Billingsella coloradoensis (Shumard), Huenella abnormis (Walcott), Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell); from 301 feet, Orygmaspis llanoensis (Walcott), and Wilbernia halli Resser, var. A. Ellinwood; from 301.5 feet, Billingsella coloradoensis (Shumard), Wilbernia halli Resser, var. A. Ellinwood, and Angulotreta microscopica (Shumard); from 302.5 feet, Orygmaspis llanoensis (Walcott), Taenicephalus shumardi (Hall), Wilbernia halli Resser, var. A. Ellinwood, Billingsella coloradoensis (Shumard), and Angulotreta microscopica (Shumard); from 304.5 feet, Taenicephalus shumardi (Hall), Billingsella coloradoensis (Shumard), large gastropod (Pelagiella? sp.), Angulotreta microscopica (Shumard), and Pelagiella sp.; from 309.5 feet, Taenicephalus shumardi (Hall), Billingsella coloradoensis (Shumard), Angulotreta microscopica (Shumard), and Pelagiella sp.; from 312 feet, Taenicephalus shumardi (Hall), Billingsella texana Bell, Angulotreta microscopica (Shumard), and Pseudodicellomus mosaicus (Bell); from 314 feet, Taenicephalus shumardi (Hall),			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Wilbernia expansa Frederickson, Billingsella texana Bell, Angulotreta microscopica (Shumard), and Pseudodicellomus mosaicus (Bell); from 314.5 feet, Taenicephalus shumardi (Hall), Billingsella sp., Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), and Pelagiella sp.; from 316 feet, Angulotreta sp., and Pseudodicellomus mosaicus (Bell); from 317 feet, Billingsella sp., and Pseudodicellomus mosaicus (Bell); from 319 feet, Taenicephalus cf. T. shumardi (Hall), Billingsella texana Bell, Angulotreta sp., and Pseudodicellomus mosaicus (Bell); from 324 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Taenicephalus shumardi (Hall), Billingsella texana Bell, Angulotreta sp., Pseudodicellomus mosaicus (Bell), and linguloid; from 328 feet, Billingsella texana Bell and linguloids; from 333 feet, Pseudagnostus cf. P. communis (Hall and Whitfield) and Taenicephalus shumardi (Hall); from 335.5 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Taenicephalus sp., Billingsella texana Bell, Angulotreta sp., linguloid and Sinuella sp.; from 337 feet, Taenicephalus sp., Billingsella texana Bell, and linguloid; from 342 feet, Idahoia lirae (Frederickson), unknown trilobite, Billingsella texana Bell, linguloid, and Sinuella sp.; from 343 feet, linguloid; from 344.5 feet, Idahoia lirae (Frederickson), Wilbernia expansa Frederickson, and Billingsella texana Bell.			
SHIFT southwest along bed at 338 feet; continue down in section.			
3. Limestone--medium- to coarse-grained; gray with pink or green cast, weathers gray; glauconitic; limonitic; dolomite spheres at 275 feet; in part fragmental; thin- to medium-bedded; in part covered; fossiliferous.	27	170	273-300

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Bell from 273+ feet, Cliffia lataegenae (Wilson), Irvingella major Ulrich and Resser, Linnarssonella girtyi Walcott, and linguloid B; from 274.5 feet, Linnarssonella girtyi Walcott; from 276 feet, Elvinia roemeri (Shumard); from 277.5 feet, Camaraspis convexa (Whitfield), Dellea suada (Walcott), Elvinia roemeri (Shumard), Linnarssonella girtyi Walcott, and Angulotreta sp.; from 279.5 feet, Elvinia roemeri (Shumard); from 281 feet, Camaraspis convexa (Whitfield), Dokimocephalus intermedius (Resser), Elvinia roemeri (Shumard), Pterocephalia sanctisabae Roemer, and Linnarssonella girtyi Walcott; from 282 feet, Camaraspis convexa (Whitfield), Dellea suada (Walcott), Elvinia roemeri (Shumard), Morosa simplexa Stitt, Pterocephalia sanctisabae Roemer, Deckera completa Wilson, and Linnarssonella girtyi Walcott; from 283 feet, Camaraspis convexa (Whitfield), Dellea suada (Walcott), Morosa simplexa Stitt, and Linnarssonella girtyi Walcott; from 284 feet, Ocnerorthis sp., Camaraspis convexa (Whitfield), Dellea suada (Walcott), Dokimocephalus intermedius (Resser), Elvinia roemeri (Shumard), Morosa simplexa Stitt, Pterocephalia sanctisabae Roemer, Linnarssonella girtyi Walcott, and linguloid; from 285.5 feet, Camaraspis convexa (Whitfield), Cliffia lataegenae (Wilson), Dellea saratogensis (Resser), Dellea suada (Walcott), Dokimocephalus sp., Elvinia roemeri (Shumard), Morosa simplexa Stitt, Pterocephalia sanctisabae Roemer, Ocnerorthis sp., and Linnarssonella girtyi Walcott; from 287.5 feet, Ocnerorthis sp., and Linnarssonella girtyi Walcott; from 288.5 feet, Camaraspis convexa (Whitfield), Cliffia lataegenae (Wilson), Dellea saratogensis (Resser), Dellea suada (Walcott), Dokimocephalus intermedius			

Description	Thickness in feet: Interval	Cumulative	Feet above base
(Resser), Elvinia roemeri (Shumard), Homagnostus tumidous (Hall and Whitfield), Morosa simplexa Stitt, Pterocephalia sanctisabae Roemer, Ocnerorthis sp., Dokimocephalus curtus (Resser), Linnarssonella girtyi Walcott, Angulotreta sp., and linguloid; from 290.5 feet, Homagnostus tumidosus (Hall and Whitfield), Comanchia amplooculata (Frederickson), Irvingella major Ulrich and Resser, Sulcocephalus candidus (Resser), Angulotreta microscopica (Shumard), and aff. Pseudodicellomus mosaicus (Bell); from 290.7 feet, Comanchia amplooculata (Frederickson), Irvingella major Ulrich and Resser, Sulcocephalus candidus (Resser), and aff. Pseudodicellomus mosaicus (Bell); from 291 feet, Comanchia amplooculata (Frederickson), Irvingella major Ulrich and Resser, Sulcocephalus candidus (Resser), Eoorthis remnicha (Winchell), Eoorthis indianola (Walcott), Angulotreta microscopica (Shumard), and Pseudodicellomus mosaicus (Bell); from 291.1 feet, Comanchia amplooculata (Frederickson), Irvingella major Ulrich and Resser, Sulcocephalus candidus (Resser), Homagnostus tumidosus (Hall and Whitfield), Eoorthis remnicha (Winchell), Eoorthis indianola (Walcott), Angulotreta microscopica (Shumard), Angulotreta microscopica digitalis Bell, and Pseudodicellomus mosaicus (Bell); from 291.2 feet, Homagnostus tumidosus (Hall and Whitfield), Comanchia amplooculata (Frederickson), Irvingella major Ulrich and Resser, Kiowaia sp., Sulcocephalus candidus (Resser), Eoorthis remnicha (Winchell), Eoorthis indianola (Walcott), Parabolinoides contractus Frederickson, Angulotreta microscopica (Shumard), and Pseudodicellomus mosaicus (Bell); from 291.3 feet, Eoorthis remnicha (Winchell), Eoorthis indianola (Walcott), Billingsella coloradoensis (Shumard), Angulotreta microscopica			

		Thickness in feet		
		Interval	Cumulative	Feet above base
	(Shumard), and linguloid; from 292.5 feet, Billingsella coloradoensis (Shumard), Pelagiella sp., Orygmaspis llanoensis (Walcott), var. A. Longacre, Parabolinoides contractus Frederickson, Angulotreta microscopica (Shumard), linguloid, Pelagiella sp., spicules, and columnals; from 294 feet, Billingsella coloradoensis (Shumard), Pelagiella sp., large gastropod? Orygmaspis llanoensis (Walcott), var. A Longacre, Parabolinoides contractus Frederickson, Angulotreta microscopica (Shumard), linguloid, Pelagiella sp., spicules, columnals, and plates; from 296 feet, Billingsella coloradoensis (Shumard), Pelagiella sp., Orygmaspis llanoensis (Walcott), Taenicephalus gouldi (Frederickson), Wilbernia halli Resser, var. A Ellinwood, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Pelagiella, columnals, and plates; from 297.5 feet, Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), Taenicephalus gouldi (Frederickson), Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Pelagiella sp., columnals, and plates.			
4.	Limestone and sandstone--limestone medium-grained; lower 23 feet red, rest greenish-gray, weathers gray and red; glauconitic; limonitic; hematitic; sandy to very sandy in lower 10 feet, sand scarce above 250 feet, sand fine to coarse; medium- to thick-bedded; fossiliferous. Sandstone fine- to medium-grained; red to greenish-gray, weathers gray; calcareous; grains poorly sorted, a few coarse; locally flat limonitic pebbles; medium- to thick-bedded, fossiliferous.	33	203	240-273
	Fossils collected by Bell from 240 feet, Linnarssonella girtyi Walcott; from 243 feet, Cliffia lataegenae (Wilson),			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	cf. Pseudosaratogia sp., and linguloid; from 247.5 feet, Elvinia sp., and Linnarssonella girtyi Walcott; from 248.5 feet, Cheilocephalus sp.; from 250 feet, Elvinia roemeri (Shumard), cf. Pseudosaratogia sp., Linnarssonella girtyi Walcott, and "sponge"; from 253.5 feet, Linnarssonella girtyi Walcott, linguloid, and "sponge"; from 264.5 feet, Kindbladia sp., and Linnarssonella girtyi Walcott; from 267 feet, Elvinia roemeri (Shumard), Kindbladia wichitaensis (Resser), and Linnarssonella girtyi Walcott; from 267.6 feet, Elvinia sp., Kindbladia affinis (Walcott), Plataspella cf. P. anatina (Resser), and Linnarssonella girtyi Walcott; from 269.5 feet, Elvinia roemeri (Shumard), Plataspella anatina (Resser), and Pterocephalia sanctisabae Roemer.			
	Welge Sandstone Member: 25 feet thick			
5.	Sandstone--medium-grained; yellowish-brown, weathers yellowish-brown and brown; friable; limonitic; locally hematitic and slightly glauconitic; grains well-sorted, rounded to subangular; medium- to thick-bedded, forms smooth to pitted rounded ledges.	25	228	215-240
	Riley Formation: 215 feet described Lion Mountain Sandstone Member: 50 feet thick			
6.	Sandstone and covered--mostly covered. Sandstone coarse-grained; green, red, gray, weathers green, gray; calcareous; very glauconitic; hematite nodules common; grains rounded; cross-bedded, medium-bedded.	21	249	194-215
7.	Limestone--medium- to coarse-grained; green, gray, weathers green; very glauconitic; limonitic; green silt beds from 188 to 190 feet; very sandy, sand coarse, rounded; cross-bedded, thin- to medium-bedded, forms smooth, blocky ledges; fossiliferous, lenses of trilobite coquinite.	29	278	165-194

Description	Thickness in feet: Interval	Cumulative	Feet above base
Cap Mountain Limestone Member: 165 feet thick			
8. Limestone--medium- to coarse-grained; green, gray, weathers greenish-gray; glauconitic; sandy; thin- to medium-bedded; fossiliferous, coquinite in upper part.	18	296	147-165
9. Limestone--in part fine-grained, gray, weathers tan and gray; glauconitic; partly silty, some sandy patches, medium-bedded. In part medium-grained; tan; weathers tan; glauconitic; limonitic; locally sandy, grains medium, rounded; thin-bedded; fossiliferous.	14	310	133-147
10. Limestone--medium-grained; tan, weathers tan; glauconitic; limonitic, some limonitic inclusions; slightly sandy, grains medium, rounded; thin- to medium-bedded; fossiliferous.	13	323	120-133
11. Covered and limestone--mostly covered. Limestone not described.	120	443	0-120

Base of section at top of red Hickory Sandstone.

Cold Creek Stratigraphic Section, Llano County

This section, not described in detail, is situated on the south slope of a sharp peak west of Cold Creek, in the Cold Creek area, northwestern Llano County (Part 1, Pl. 7, fig. 11). The fossil lists were updated by Bell during June 1969. Thicknesses of units in the Cold Creek section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Moore Hollow Group (370 feet measured)		
Wilberns Formation (370 feet measured)		
San Saba Member (74 feet measured)		
Calcitic facies	74+	343-417
Point Peak Member	140	203-343
Morgan Creek Limestone Member	128	75-203
Welge Sandstone Member	28+	47-75
Riley Formation (47 feet measured)		
Lion Mountain Sandstone Member	47-	0-47

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 370 feet described			
Wilberns Formation: 370 feet described			
San Saba Member: 74 feet described			
Calcitic facies: 74 feet described			
1. Limestone--very fine-grained to aphanitic, yellowish-gray, mottled.	10	10	407-417
2. Limestone--reef and interreef beds.	64	74	343-407
Point Peak Member: 140 feet thick			
3. Siltstone, limestone, and shale--limestone mostly intraformational conglomerate at following levels: 233, 245, 247, 252 to 253, 257, 261, 266, 269 to 271, 279 to 280, 290, 299, 300, 302, 307, 308, 309, 311, 316, 320 to 321, 325 to 326, 329, 331 to 332, 334, 337, 339, and	140	214	203-343

Description	Thickness in feet: Interval	Cumulative	Feet above base
341 feet; a fine-grained bed at 206 feet; a hyolithid-bearing bed at 220 feet; and an oolitic, trilobitic bed from 321 to 322 feet. Siltstone and shale fairly well exposed, comprise rest of interval.			
Fossils collected by Ellinwood from 219 feet, Drumaspis idahoensis Resser; from 266 feet, Illanurus sp. and granulate pygidium and glabella.			
Morgan Creek Limestone Member: 120 feet thick			
4. Limestone--granular, greenish-gray, glauconitic, fossiliferous.	78	292	125-203
Fossils collected by Ellinwood from 125 feet, Angulotreta microscopica (Shumard), Ceratreta hebes Bell, linguloid, Billingsella coloradoensis (Shumard), and Parabolinoides contractus Frederickson; from 128 feet, Angulotreta cf. A. microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella coloradoensis (Shumard); from 129 feet, Angulotreta cf. A. microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), and Taenicephalus gouldi (Frederickson); from 131 feet, Pseudodicellomus mosaicus (Bell), Billingsella coloradoensis (Shumard), Huenella abnormis (Walcott), Conaspis leptoholcus Longacre, Conaspis testudinatus Ellinwood, Orygmaspis llanoensis (Walcott), and Wilbernia halli Resser, var. A. Ellinwood; from 136 feet, Angulotreta cf. A. microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella coloradoensis (Shumard), and Taenicephalus shumardi (Hall); from 143 feet, Billingsella coloradoensis (Shumard), Taenicephalus shumardi (Hall), Taenicephalus sp.,			

Description	Thickness in feet: Interval	Cumulative	Feet above base
and Wilbernia expansa Frederickson; from 162 feet, Idahoia lirae (Frederickson); from 176 feet, Drumaspis texana Resser, Saratogia fria Lochman and Hu, and Saratogia modesta (Lochman and Hu); from 184 feet, Drumaspis texana Resser, Saratogia fria Lochman and Hu, and Saratogia modesta (Lochman and Hu); from 193 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis idahoensis Resser, Saratogia fria Lochman and Hu, and Wilbernia pero (Walcott); from 202 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis idahoensis Resser, Saratogia modesta (Lochman and Hu), and large hypostoma.			
Fossils collected by Wilson from 126 feet, Angulotreta microscopica (Shumard), Parabolinoides contractus Frederickson, and spicules.			
5. Limestone--granular; lower 20 feet grayish-red, next 20 feet alternating grayish-red and greenish-gray.	50	342	75-125
Fossils collected by Wilson from 94 feet, Pterocephalia sanctisabae Roemer; from 106 feet, Linnarssonella girtyi Walcott, Camaraspis convexa (Whitfield), and linguloid fragments; from 115 feet, Linnarssonella girtyi Walcott, Dellea suada (Walcott), Elvinia roemeri (Shumard), Kindbladia wichitaensis (Resser), Pterocephalia sanctisabae Roemer, and linguloid fragments type B; from 117 feet, Linnarssonella girtyi Walcott, Pseudagnostus cf. P. communis (Hall and Whitfield), Deadwoodia duris (Walcott), Elvinia roemeri (Shumard), Irvingella major Ulrich and Resser, Kindbladia affinis (Walcott), Plataspella sp., Homagnostus sp., and spicule type B; from 121 feet, Angulotreta cf. A.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
microscopica (Shumard), linguloid type A, Comanchia amplooculata (Frederickson), and Irvingella major Ulrich and Resser; from 124 feet, Angulotreta microscopica (Shumard), Angulotreta microscopica digitalis Bell, linguloid type B, Billingsella coloradoensis (Shumard), Eoorthis remnicha (Winchell), Eoorthis indianola (Walcott), Comanchia amplooculata (Frederickson), Irvingella major Ulrich and Resser, and Parabolinoides granulosus Ellinwood.			
Fossils collected by Ellinwood from 123 feet, Angulotreta microscopica (Shumard), Irvingella major Ulrich and Resser, and linguloid type A; from 124 feet, Angulotreta microscopica (Shumard), Angulotreta microscopica digitalis Bell, linguloid type B, Billingsella coloradoensis (Shumard), Eoorthis remnicha (Winchell), Eoorthis indianola (Walcott), Irvingella major Ulrich and Resser, Sulcocephalus candidus Resser, Parabolinoides contractus Frederickson, Parabolinoides granulosus Ellinwood, and undet. pygidium.			
Welge Sandstone Member: 28+ feet thick			
6. Sandstone--medium- to coarse-grained, some granules and small pebbles in top bed, one measures 0.45 inch.	28+	370	47-75
Riley Formation: 47- feet described			
Lion Mountain Sandstone Member: 47- feet thick			
7. Covered and limestone--a few glauconitic limestone beds in lower part, trilobite coquinite cross-beds as float throughout most of interval.	47-	417	0-47

Contact between Welge and Lion Mountain Sandstones is not exposed, probably not far beneath the lowest Welge seen.

Slick Mountain Stratigraphic Section, Llano County

The Slick Mountain section is on the south side of Slick Mountain about 6.5 miles airline southwest of Valley Spring, Llano County. The base of the section is at the bottom of the Hickory Sandstone and the lower 260 feet is poorly exposed. The top of the section is at the top of Slick Mountain (Part 1, Pl. 7, fig. 12).

Thicknesses of units in the Slick Mountain section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Moore Hollow Group (640 feet measured)		
Wilberns Formation (120 feet measured)		
Morgan Creek Limestone Member	102+	538-640
Welge Sandstone Member	18	520-538
Riley Formation (520 feet measured)		
Lion Mountain Sandstone Member	57	463-520
Cap Mountain Limestone Member	177	286-463
Hickory Sandstone Member	286	0-286

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 640 feet described			
Wilberns Formation: 120 feet described			
Morgan Creek Limestone Member: 102 feet described			
1. Limestone--medium- to coarse-grained, finer grained upward; gray, weathers gray and brown; glauconitic to slightly glauconitic; locally silty, more silty toward top; stromatolitic bioherms from 635 to 640 feet; fossiliferous; medium-bedded.	38	38	602-640
2. Limestone--fine- to medium-grained, some coarse-grained coquinite lenses; gray, weathers gray; slightly glauconitic; silty patches; fossiliferous; mostly thin-bedded, a few medium beds, poorly exposed.	15	53	587-602

Description	Thickness in feet: Interval	Cumulative	Feet above base
3. Limestone--very coarse grained; greenish-gray, a few beds with reddish cast, weathers brown and gray; slightly to very glauconitic; lower 5 feet sandy; fossiliferous, coquinite lenses common; medium- to thick-bedded.	33	86	554-587
Eoorthis coquinite at 587 feet.			
4. Limestone--medium- to coarse-grained; greenish-red, weathers reddish-gray; sandy, very glauconitic; fossiliferous; thin- to thick-bedded, forms rounded ledges.	16	102	538-554
Welge Sandstone Member: 18 feet thick			
5. Sandstone--mostly medium-grained, some coarse-grained; yellowish-white, weathers brownish-gray; calcareous; slightly limonitic; friable; grains subrounded to rounded, fairly well sorted; massive- to thick-bedded, poorly exposed, forms rounded ledges.	18	120	520-538
Riley Formation: 520 feet thick			
Lion Mountain Sandstone Member: 57 feet thick			
6. Limestone and covered--mostly covered. Limestone mostly coarse-grained; gray, weathers brown and gray; slightly to very glauconitic; sandy; iron nodules common in float; most exposed beds are trilobite coquinite; thin-bedded, very poorly exposed.	57	177	463-520
Cap Mountain Limestone Member: 177 feet thick			
7. Limestone--mostly medium- to coarse-grained, basal part fine-grained, some very coarse-grained coquinite lenses; gray, weathers brown; slightly to very glauconitic; limonitic, locally hematitic; sandy, sand very fine; basal part silty; oolitic bed at 414 feet; fossiliferous; thin- to medium-bedded, poorly exposed.	93	270	370-463

	Description	Thickness in feet: Interval	Cumulative	Feet above base
8.	Limestone and covered--mostly covered. Limestone coarse-grained; white, gray, weathers brown; nonglauconitic to glauconitic; limonitic; fossiliferous, coquinite lenses common; medium-bedded.	45	315	325-370
9.	Limestone and covered--mostly covered. Limestone fine-grained; greenish-gray, weathers gray; very silty, some patches of siltstone; locally slightly sandy; medium- to thick-bedded.	10	325	315-325
10.	Limestone and sandstone--limestone very sandy grading to calcareous sandstone, some thin partings of sandstone similar to those in the Hickory; fine-grained; greenish-gray, weathers gray; some lenses silty; sand fine, coarse grains scarce, rounded, in part coated by hematite or limonite; fossiliferous; medium- to thick-bedded.	29	354	286-315
	Hickory Sandstone Member: 286 feet thick			
11.	Sandstone--coarse-grained; deep red, weathers red, some brown ledges; slightly to mostly noncalcareous; friable; very hematitic and limonitic; sand subrounded to rounded, coated with hematite and limonite; very fossiliferous; near top some very thin lenses of ferruginous limestone, greenish-gray, very sandy, very fossiliferous; medium- to thick-bedded, poorly exposed on slope, completely exposed in road material quarry.	26	380	260-286
12.	Covered and sandstone--mostly covered. Sandstone very poorly exposed, approximately the upper 40 feet similar to unit 11.	260	640	0-260

Little Llano River--Point Peak Area, San Saba and Llano Counties

Little Llano River Stratigraphic Section, San Saba County

The Little Llano River section in southern San Saba County may be reached from Cherokee by following Ranch Road 501 eastward 3 miles, then a graded road southward about 3 miles. It can also be reached by Babyhead in Llano County by following a graded road eastward and northward a total of about 6 miles. The top of the section is along a north-south fence about 400 feet north of the edge of the Point Peak scarp, 4,400 feet east of the Babyhead-Little Llano River Road, and about 1.75 miles north of Little Llano River. The base of the section is in a drain 600 feet west of the Babyhead-Little Llano River Road, 3,000 feet north of Little Llano River, and about 1,300 feet west of a ranch house (Part 1, Pl. 7, fig. 14).

The Little Llano River section as originally measured by Bridge (Bridge, Barnes, and Cloud, 1947) included rocks from the top of the Cap Countain Limestone Member to a fault within the dolomitic facies of the San Saba Member. A reconnaissance of the area revealed a fairly well-exposed section of the rest of the Riley Formation. During 1948, Palmer laid off the Riley part of the section in 5-foot intervals and made fossil collections. During April and May 1949, Barnes and Walker mapped the area and added beds to the section through the Eoorthis Zone. During March 1950, Barnes and Ellinwood added 259 feet of section above the Eoorthis Zone. The section was described by Barnes while Walker and Ellinwood chip-sampled it in 5-foot intervals. If the line of section had been continued northeastward, some of the dolomitic facies of the San Saba Member could have been included, but the thickness measured would have been inaccurate as these rocks are exposed on a dip slope.

Above the Eoorthis Zone exposures are rather poor; some intervals are covered, dips vary widely, and small faults cross the section; therefore, thickness measurements are likely somewhat inaccurate. The top 4 feet of the Morgan Creek Limestone, not well-exposed in the line of section, is well-exposed along the strike 3,000 feet to the northwest. This 4 feet of rock is of various shades of pale red and similar to its appearance elsewhere in the northeastern part of the Llano region. The upper part of the Point Peak Member, mostly covered in the line of section, is well-exposed in a creek bed in the northeastern part of the area, where it is composed of 0.25-inch and less beds of calcareous siltstone separated by green shale.

Fossil lists were updated by Bell during July 1969.

Thicknesses of units in the Little Llano River section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Moore Hollow Group (931 feet measured)		
Wilberns Formation (333 feet measured)		
San Saba Member (46 feet measured)		
Calcitic facies	46+	885 - 931
Point Peak Member	139	746 - 885
Morgan Creek Limestone Member	121	625 - 746
Welge Sandstone Member	27	598 - 625
Riley Formation (598 feet)		
Lion Mountain Sandstone Member	61	537 - 598
Cap Mountain Limestone Member	174	363 - 537
Hickory Sandstone Member	363	0 - 363

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 931 feet described			
Wilberns Formation: 333 feet described			
San Saba Member: 46 feet described			
Calcitic facies: 46 feet described			
1. Limestone--very fine grained to aphanitic, light yellowish-gray, in part mottled pale yellowish-orange, girvanella common.	6	6	925 - 931
2. Limestone and covered--covered from 891 to 892, 895 to 901, 903 to 910, 917 to 920, and 924 to 925 feet; limestone very fine grained to aphanitic; from 885 to 891 feet, aphanitic, very light olive gray to pale yellowish-brown, upper 5 feet mottled dark yellowish-orange, girvanella numerous, some fossil debris and clear calcite matrix, stylolitic; from 892 to 893 feet, yellowish-gray, girvanella common; from 893 to 895 feet, pale	40	46	885 - 925

Description	Thickness in feet: Interval	Cumulative	Feet above base
yellowish-brown mottled dark yellowish-orange except in girvanella-bearing upper few inches; from 901 to 903, 910 to 917, and 920 to 924 feet, pale yellowish-brown mottled dark yellowish-orange, girvanella common in upper two intervals.			
Thin sectioned at 886 feet. Limestone--girvanella, pellets, indistinct intraclasts, some trilobite, brachiopod, and pelmatozoan debris in an aphanitic to microgranular matrix; intraclasts aphanitic to microgranular in very fine grained, clear calcite matrix, form a thin bed; girvanella 4 to 9 mm, in part aphanitic and spicular, in part composed of a network microgranular to very fine grained, clear calcite surrounding aphanitic pellets and longer structures (typical stromatolitic structure); girvanella partly missing along a stylolite that is younger than a narrow calcite vein.			
Fossils collected by Ellinwood from 885, 886, and 887 feet, Billingsella rhomba Ellinwood.			
Point Peak Member: 139 feet thick			
3. Limestone and covered--covered except as follows: limestone intraformational conglomerate--at 826 feet, 6-inch bed; from 827 to 828 feet, hyolithids(?) in top inch; at 831, 836, and 840 feet, pebbles small, in middle bed numerous large trilobite fragments, some chert; at 858 feet, a thin bed; from 863 to 864 feet, rests on limestone, fine-grained, medium light-gray, thin-bedded; from 874 to 878 feet, a few beds. Limestone oolitic--at 829 feet, white, ooids siliceous, some small pebbles, trilobite fragments common, a 6-inch bed; from	60	106	825 - 885

Description	Thickness in feet: Interval	Cumulative	Feet above base
847 to 849 feet, very light olive gray with a pinkish cast, mottled grayish-orange and dark yellowish-orange, stylolites abundant, girvanella common in part dissolved along stylolites, one bed, silicified brachiopods in lower part; from 860 to 861 feet, granular, pale to dark yellowish-brown, very oolitic, much fossil debris with matrix of clear to milky calcite, an undulatory upper surface suggestive of ripple marks; from 872 to 874 feet, granular, very pale orange, oolitic, ooids in part hollow, matrix clear calcite, one bed, girvanella common, a few silicified brachiopod fragments; at 878 feet, some patches of silicification, a 4-inch bed; at 879 feet, pale to dark yellowish-brown, very oolitic, ooids in calcite cement, intraclastic, much fossil debris. Limestone fine-grained--from 842 to 847 feet, a few exposures light-gray, silty, inch-thick beds; from 864 to 872 feet, a few exposures, light olive-gray to medium light-gray, silty, thin-bedded; from 874 to 878 feet, a few exposures, yellowish-gray, very silty, micaceous, thin-bedded.			
Thin sectioned at 848, 860, 874, 878, and 879 feet. At 848 feet, limestone--dolomite, some trilobite debris and girvanella in an aphanitic matrix, one thin irregular, very fine grained bed partly replaced by dolomite; dolomite 0.05 to 0.25 mm, mostly irregular mottles along bedding, some randomly distributed, mostly altered to calcite and admixed limonite; one cellular fossil of optically continuous calcite represented by about a dozen cells, cells 0.06 to 0.09 mm; girvanella composed of network microgranular to very fine grained, clear calcite and aphanitic pellets and longer structures (typical			

Description	Thickness in feet: Interval	Cumulative	Feet above base
stromatolitic structure); stylolites have limonitic clay along them. At 860 feet, limestone--closely packed ooids, some glauconite, and trilobite debris in an indistinctly pelleted, aphanitic to microgranular matrix; ooids 0.15 to 1 mm, mostly near 1 mm, excellent radial and concentric structure about aphanitic centers, individual calcite crystals and a few fossil fragments; silt very scarce, mostly feldspar; glauconite admixed with calcite scarce, mostly fragments; portions of ooids missing along a stylolite (Pl.13, fig. 6), which cuts a fine grained calcite vein. At 874 feet, limestone--closely packed ooids, a few intraclasts, pelmatozoan fragments, trilobite debris, and girvanella with spicules(?) in a very fine grained calcite matrix; intraclasts aphanitic, slightly silty, a few pelleted, many oolitic, ooids truncated in only one (Pl.14, fig. 1); ooids 0.15 to 0.7 mm, distinct radial and concentric structure about centers of aphanitic limestone and a few of calcite crystals and fossil fragments; one small chert area slightly smaller than an average ooid. At 878 feet, limestone or siltstone--some beds very silty, microgranular limestone, others very calcitic siltstone; silt mostly feldspar and quartz, opaque minerals abundant; mica mostly muscovite and altered biotite, hydrobiotite common; silt-size grains of glauconite common; distinctly bedded. At 879 feet, limestone--closely packed ooids, some trilobite debris, a few intraclasts and gastropods in a cloudy, aphanitic to fine grained, clear calcite matrix; intraclasts aphanitic, in part silty, glauconitic, argillaceous; fillings in fossils densely aphanitic, silt and glauconite scarce, a 0.25-mm chert			

Description	Thickness in feet: Interval	Cumulative	Feet above base
sphere in one, a gastropod with shell material represented by a mosaic of clear calcite contains in addition an ooid and another gastropod, ooids 0.25 to 0.5 mm, radial structure with wedge-shaped calcite crystals in part twinned about aphanitic centers and individual calcite crystals (a few almost as large as the ooid)and a few fossil fragments; ooids in part sharply set off from matrix, in part blend with matrix (Pl.14, fig.2); silt very scarce, mostly feldspar, a few rhombs. Fossils collected by Ellinwood from 825 feet, Plectotrophia alata (Walcott); from 826 feet, Billingsella corrugata inornata Ellinwood; from 829 feet, Plectotrophia alata (Walcott) and Billingsella corrugata inornata Ellinwood; from 844 feet, Billingsella corrugata inornata Ellinwood; from 846 feet, large high-spired gastropod; from 848 feet, Billingsella corrugata inornata Ellinwood; from 849 feet, large high-spired gastropod. Fossils from 828 feet, hyolithids(?); from 879 feet, a few high-spired gastropods and poorly preserved Owenella(?) sp.			
4. Limestone--medium-grained; oolitic; intraformational conglomerate at base; stromatolites abundant, mottled light brownish-gray and light olive-gray, slightly dolomitic, in part extend entirely through bed, in part confined to upper part; stylolitic; essentially one bed. Chert along strike, a coquinite of silicified brachiopods cemented by silica.	2	108	823 - 825

Description	Thickness in feet: Interval	Cumulative	Feet above base
Upper foot a coquinite of silicified Plectotrophia, on upper surface some patches of silicified Billingsella.			
5. Covered and slumped--present position of slumped material follows: from 775 to 780 feet, about 2 feet of flat pebble intraformational conglomerate, both pebbles and matrix fine grained, pebbles possibly slightly finer grained, edges rounded; a few moderate yellowish-brown, dimpled stromatolites of dolomite, very fine grained to microgranular, grayish-red; from 785 to 786 feet, intraformational conglomerate, pebbles dark yellowish-orange to grayish-orange and greenish-gray, matrix somewhat coarser, pale-brown; from 790 to 795 feet, similar to interval from 775 to 780 feet, except intraformational conglomerate more massive, much of it edgewise; at 799 feet, intraformational conglomerate, pebbles dark yellowish-orange and greenish-gray, matrix greenish-gray; at 814 feet, intraformational conglomerate, pebbles 0.25-inch plates up to 6 inches across, mostly edgewise, dark yellowish-orange on periphery grading to grayish-orange within.	48	156	775 - 823
Thin sectioned at 782 and 814 feet. At 782 feet limestone--intraformational conglomerate, pebbles, granules, and smaller intraclasts and trilobite debris in scant matrix of fine- to medium-grained secondarily enlarged pelmatozoan debris; pebbles aphanitic to fine-grained, in part pelleted, in part contain abundant fossil debris, glauconite and silt, some are argillaceous, others limonitic; dolomite 0.25 mm, in matrix, replaces intraclasts, replaced by calcite admixed with limonite. At 814 feet, limestone--a few intraclasts and some			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	trilobite debris mostly in an aphanitic matrix, matrix in part microgranular to very fine grained; intraclasts of granule size, aphanitic; dolomite 0.1 mm, mostly replaced by calcite admixed with limonite, possibly defines a burrow as it surrounds an area of clear calcite; caliche fills openings along stylolites. Fossils collected by Ellinwood from 817 feet, Plectotrophia alata (Walcott).			
6.	Covered. Fossils collected by Ellinwood from 750 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis idahoensis Resser, Ellipsocephaloides silvestris Resser, and Saratogia modesta (Lochman and Hu).	29	185	746 - 775
	Morgan Creek Limestone Member: 121 feet thick			
7.	Covered--some limestone at 746 feet, pale red.	4	189	742 - 746
8.	Limestone and covered--80 percent covered; rest limestone medium- to coarse-grained, light olive-gray to yellowish-gray, slightly glauconitic, much fossil debris in a clear calcite matrix. Thin sectioned at 721 and 728 feet. At 721 feet, limestone--abundant trilobite debris, a few gastropods and phosphatic brachiopod fragments, intraclasts, pellets and some glauconite included in fine- to medium-grained authigenic calcite added to pelmatozoan debris; intraclasts densely aphanitic, some trilobite debris and tiny spicules(?), similar material fills fossils; silt scarce, mostly feldspar; glauconite 0.05 to 0.3 mm, mostly irregular fragmental grains, one with parallel structure may be forming from biotite. At 728 feet, limestone--abundant trilobite debris,	23	212	719 - 742

Description	Thickness in feet: Interval	Cumulative	Feet above base
gastropods, intraclasts, silt, and glauconite included in fine- to coarse-grained authigenic calcite added to pelmatozoan debris; intraclasts aphanitic, some fossil debris and silt, similar material fills fossils; silt, mostly quartz and feldspar; glauconite 0.05 to 0.3 mm, rounded to lobate and fragmental, a "moth-eaten" appearance from admixed calcite. Fossils collected by Bell from 719 feet, Angulotreta sp., linguloid type B, Sinuella minuta Knight, Billingsella texana Bell, Idahoia lirae (Frederickson), and aglaspid?; from 728 feet, Angulotreta sp., linguloid type B, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, Ptychaspis bullasa Lochman and Hu, Saratogia americana (Lochman and Hu), Saratogia fria Lochman and Hu, Wilbernia pero (Walcott), and Sinuella minuta Knight. Fossils collected by Ellinwood from 725 feet, linguloid type B, Billingsella cf. B. texana Bell, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, Ptychaspis bullasa Lochman and Hu, Saratogia americana (Lochman and Hu), Saratogia fria Lochman and Hu, Wilbernia pero (Walcott), and Sinuella minuta Knight; from 738 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis idahoensis Resser, Saratogia modesta (Lochman and Hu), and undet. trilobite gen. and sp.; from 741 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis idahoensis Resser, and Saratogia modesta (Lochman and Hu).			
9. Limestone--mostly coarse- and fine-grained; coarse-grained from 706 to 707, 710 to 711, and 714 to 718 feet, fossiliferous, clear calcite matrix between fossil fragments,	14	226	705 - 719

Description	Thickness in feet: Interval	Cumulative	Feet above base
upper interval covered near base; fine-grained from 707 to 710 and 711 to 713 feet, argillaceous, silty, recessive, lower interval thin-bedded, upper interval nodular; glauconitic; some dark yellowish-orange dolomite patches from 713 to 714 and 718 to 719 feet. Thin sectioned at 714 feet. Limestone--abundant trilobite debris, numerous gastropods, some silt and glauconite included in fine- to medium-grained authigenic calcite added to pelmatozoan debris; fillings in gastropods and enclosed parts of trilobites, aphanitic, slightly fossiliferous, silty and glauconitic; silt mostly quartz and feldspar; glauconite mostly 0.05 mm, grains fragmental; dolomite 0.15 mm, replaces intraclasts and fossils, completely replaced by calcite and limonite, scarce; some limonitic clay along a stylolite. Pelmatozoan columnals and phosphatic brachiopod fragments common. Fossils collected by Bell from 712 feet, Huenella texana (Walcott). Fossils collected by Ellinwood from 714 feet, Angulotreta, sp. linguloid type B, Sinuella minuta Knight, and Idahoia lirae (Frederickson).			
SHIFT eastward about 100 feet along beds; continue down in section.			
10. Limestone and covered--limestone mostly coarse- to medium-grained; mostly light olive-gray; at 682 feet, mottled moderate yellowish-brown and grayish-green; slightly glauconitic; dolomite in top two beds, 0.25- to 6-inch patches, dark yellowish-orange; very fossiliferous, matrix clear calcite; from 691 to 692	33	259	672 - 705

Description	Thickness in feet: Interval	Cumulative	Feet above base
feet, fine-grained, medium light-gray, slightly micaceous, glauconitic, nodular.			
Thin sectioned at 672 feet (two sections) and 692 feet. At 672 feet, limestone--abundant trilobite and calcareous brachiopod debris, a few phosphatic brachiopod fragments, much glauconite, some silt and very fine sand included in fine to very fine-grained authigenic calcite added to pelmatozoan debris; glauconite mostly 0.05 to 0.25 mm, grains angular to rounded and elliptical, a few curved, mostly cloudy; silt and sand mostly quartz and feldspar; dolomite about 0.15 mm, a patch replaced by calcite admixed with limonite. At 672A feet, limestone--abundant trilobite debris, some calcareous and phosphatic brachiopod fragments, glauconite, intraclasts, silt and very fine sand mostly included in fine- to medium-grained authigenic calcite added to pelmatozoan debris, some aphanitic matrix; intraclasts densely aphanitic, slightly silty, in part fossiliferous, in part appear to have been fossil fillings; silt and sand mostly quartz and feldspar; glauconite mostly 0.05 to 0.25 mm, mostly cloudy, grains angular to rounded and elliptical, some curved, some 1.5-mm grains partly altered, cloudy, admixed with calcite; glauconite also coats a 2.5-mm intraclast, transitional grains between hydrobiotite and glauconite common. At 692 feet, limestone--abundant trilobite and calcareous brachiopod debris, a few phosphatic brachiopod fragments, some glauconite and silt included in fine- to coarse-grained authigenic calcite added to pelmatozoan debris; silt mostly quartz and feldspar, opaque minerals common; glauconite mostly 0.05 to 0.15 mm, grains angular to rounded and elliptical, mostly clear; dolomite 0.03 to 0.15 mm, replaces			

Description	Thickness in feet: Interval	Cumulative	Feet above base
matrix and fossils, mostly altered to calcite, some rhombic limonitic zones.			
Fossils collected by Bell from 672 feet, Angulotreta microscopica (Shumard), Angulotreta microscopica (Shumard), var. digitalis Bell, linguloid type B, Billingsella coloradoensis (Shumard), Eoorthis remnicha (Winchell), Irvingella major Ulrich and Resser, and Parabolinoides granulosus Ellinwood; from 682 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella coloradoensis (Shumard), Conaspis testudinatus Ellinwood, Orygmaspis llanoensis (Walcott), Taenicephalus shumardi (Hall), and Wilbernia halli Resser, var. A Ellinwood; from 686 feet, Angulotreta sp., Pseudodicellomus mosaicus (Bell), Billingsella texana Bell, Conaspis aff. C. testudinatus Ellinwood, Taenicephalus shumardi (Hall), and Wilbernia expansa Frederickson; from 692 feet, Angulotreta sp. and Pseudodicellomus mosaicus (Bell): from 693 feet, Angulotreta sp., Pseudodicellomus mosaicus (Bell), Pelagiella sp., Billingsella texana Bell, and Taenicephalus shumardi (Hall).			
Fossils collected by Ellinwood from 672.5 feet, Billingsella coloradoensis (Shumard), Eoorthis indianola (Walcott), Parabolinoides contractus Frederickson, Parabolinoides cf. granulosus Ellinwood, Wilbernia halli Resser, and Pelagiella sp.; from 673 feet, Angulotreta microscopica (Shumard), Pelagiella sp., Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), var. A Longacre, Parabolinoides contractus Frederickson, and Pelagiella sp.; from 675.5 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Pelagiella sp., and Billingsella coloradoensis (Shumard); from 676 feet, Angulotreta microscopica			

Description	Thickness in feet: Interval	Cumulative	Feet above base
(Shumard), Pseudodicellomus mosaicus (Bell), Pelagiella sp., Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), Taenicephalus gouldi (Frederickson), and Wilbernia halli Resser, var. A Ellinwood; from 680.5 feet, Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), Taenicephalus shumardi (Hall), Wilbernia halli Resser, var. A Ellinwood, and Pelagiella sp.; from 682.5 feet, Angulotreta sp., Pseudodicellomus mosaicus (Bell), Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), Taenicephalus shumardi (Hall), and Wilbernia halli Resser; from 691 feet, Pseudodicellomus mosaicus (Bell), Billingsella texana Bell, and Taenicephalus shumardi (Hall); from 696 feet, Billingsella texana Bell; from 700 feet, Billingsella texana Bell and Taenicephalus shumardi (Hall).			
Faulting may be present, as this interval appears to be about 10 feet thinner than normal when compared with other sections.			
SHIFT west-northwestward about 1,050 feet along Eoorthis Bed; continue down in section.			
11. Limestone--coarse-grained; pale red to greenish-gray to very light gray, very light olive-gray to yellowish-gray, pale yellowish-brown, much mottled dark yellowish-orange and grayish-orange; glauconitic; pebble-like clay(?) balls common, may be algal in origin, trilobite carapaces partly within clay balls, partly within matrix; intraformational conglomerate at 647, 649 and 660(?) feet, pebbles calcareous siltstone; at 650 feet, oolitic; stylolites abundant in thicker beds; bedding wavy, beds average between 2 and 6 inches, a few up to a foot; from 642 to 657 feet, alternating ledges and recessive intervals, rest mostly ledges.	30	289	642 - 672

Description	Thickness in feet: Interval	Cumulative	Feet above base
Thin sectioned at 650, 657, 661, 667, and 671 feet. At 650 feet, limestone--abundant trilobite debris, much glauconite, a few intraclasts, ooids and phosphatic brachiopod fragments, and some silt and very fine sand mostly included in fine- to coarse-grained authigenic calcite added to pelmatozoan debris; a few small patches aphanitic, pelleted; intraclasts densely aphanitic, very argillaceous and limonitic, faintly bedded, similar material fills fossils; ooids scarce, 0.25 to 1.2 mm, radial structure, included stringy aphanitic calcite, some fossil debris, and an occasional grain of glauconite, one with "ordered" glauconite where grain reaches periphery of ooid, in part replaced by dolomite; silt and sand mostly quartz, some feldspar; glauconite 0.05 to 1 mm, lobate to rounded and fragmental, "moth-eaten" appearance from admixed calcite, cloudy; dolomite 0.2 mm, very scarce, replaces ooids, replaced by calcite mosaic, limonitic. At 657 feet, limestone--trilobite debris, authigenicallly enlarged pelmatozoan debris, glauconite, intraclasts and/or objects faintly resembling spicule type B in an aphanitic to very fine grained matrix, some coarse-grained clear calcite may fill voids; intraclasts and spicule type B(?), aphanitic, mostly circular, 0.1 to 0.3 mm, in part with a very thin radial overgrowth, a few contain silt, glauconite, and fossil debris; silt scarce, mostly quartz and feldspar; glauconite 0.05 to 0.75 mm, lobate, mostly cloudy, "moth-eaten" appearance from admixed calcite; dolomite in matrix scarce, 0.1 mm, replaced by calcite mosaic; a stylolite with some limonitic clay along it.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
At 661 feet, limestone--trilobite and authigenically enlarged pelmatozoan debris, fossil fillings and/or intraclasts and glauconite in an aphanitic to very fine grained matrix; fossil fillings aphanitic, circular, in part with a very thin radial overgrowth, intraclasts of similar appearnace in part contain glauconite and silt; silt scarce, mostly quartz and feldspar; glauconite 0.1 to 1 mm, lobate, mostly cloudy, "moth-eaten" appearance from admixed calcite; dolomite scarce, mostly in matrix, replaced by calcite and admixed limonite. At 667 feet, limestone--finely comminuted trilobite and phosphatic brachiopod debris, glauconite, patches of dolomite and a few pellets included in very fine to coarse grained authigenic calcite added to pelmatozoan debris; slightly silty, mostly angular, cloudy; dolomite 0.03 to 0.1 mm, replaces matrix and fossils, mostly replaced by calcite and abundant admixed limonite, a burrow may be indicated by dolomite surrounding a clear calcite mosaic. At 671 feet, limestone--much trilobite debris and authigenically enlarged pelmatozoan fragments, a few intraclasts, and some glauconite and dolomite mostly in an aphanitic to very fine grained matrix; intraclasts densely aphanitic, some glauconite and fossil debris; silt mostly quartz and feldspar; glauconite 0.05 to 0.3 mm, grains irregular to rounded; dolomite 0.15 mm, replaced by calcite and admixed limonite.			
Fossils collected by Bell from 657 feet, Linnarssonella girtyi Walcott, Camaraspis convexa (Whitfield), Dellea suada (Walcott), Dokimocephalus intermedius (Resser), Elvinia roemeri (Shumard), and pelmatozoan columnals; from 666 feet, Linnarssonella girtyi			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Walcott, and spicule type B; from 667 feet, Linnarssonella girtyi Walcott; from 669 feet, Angulotreta sp., Linnarssonella girtyi Walcott, linguloid type B, ocnerorthid brachiopod, Camaraspis convexa (Whitfield), Comanchia amplooculata (Frederickson), Dellea suada (Walcott), Elvinia roemeri (Shumard), Irvingella major Ulrich and Resser, and Pterocephalia sp.; from 671.8 feet, Angulotreta microscopica (Shumard), var. digitalis Bell, linguloids types A and B, Eoorthis indianola (Walcott), Eoorthis remnicha (Winchell), Comanchia amplooculata (Frederickson), Dellea? punctata Palmer, Irvingella major Ulrich and Resser, Parabolinoides contractus Frederickson, and Sulcocephalus candidus (Resser).			
	Fossils collected by Ellinwood from 671.5 feet, Angulotreta sp. and linguloid type B; from 671.6 feet, Angulotreta sp., micromitrid, linguloid type B, Lingulella cf. L. acutangula (Roemer), Comanchia amplooculata (Fredrickson), Irvingella major Ulrich and Resser, and Sulcocephalus candidus (Resser); from 671.7 feet, Camaraspis convexa (Whitfield), Comanchia amplooculata (Frederickson), and Irvingella major Ulrich and Resser.			
12.	Limestone--coarse-grained; grayish-red at base grading upward to pale-red and pale reddish-brown, upper bed with greenish cast, some dark yellowish-orange specks and mottles; mostly glauconitic; lower 5 feet very sandy, less sandy upward, only a few grains in upper bed, grains in lower 6 inches up to 0.2 inch; in part oolitic, much authigenic calcite about fossil debris; some interformational conglomerate, pebbles in part oolitic, ooids in part	17	306	625 - 642

	Thickness in feet		
	Interval	Cumulative	Feet above base

replaced by dolomite, matrix oolitic; beds mostly 2 to 6 inches.

Thin sectioned at 627 and 635 feet. At 627 feet, limestone--trilobite debris, sand, glauconite, and dolomite included in fine- to coarse-grained authigenic calcite added to abundant pelmatozoan debris; sand very fine to coarse, angular to spherical, mostly quartz, straight to undulatory extinction, a few grains composite, feldspar very scarce, a few rhombs; glauconite 0.15 to 0.7 mm, mostly weathered to limonite, grains fairly smooth, in part invades pelmatozoan debris as also does limonite; dolomite 0.25 mm, mostly replaces pelmatozoan(?) debris, replaced by calcite and admixed limonite. At 635 feet, limestone--trilobite debris, glauconite, ooids, dolomite, silt, and sand included in fine- to coarse-grained authigenic calcite added to pelmatozoan debris; a few intraclasts with admixed limonite; ooids 0.25 to 2 mm, rusty, simple to compound, some concentric structure, radial structure indistinct, much calcite dust, a few contain intraclasts, sand and fossil fragments, in part dolomitized; sand fine and very fine, mostly angular, mostly quartz, feldspar scarce, a few rhombs; glauconite 0.05 to 0.75 mm, lobate to fragmental, admixed with calcite, invades pelmatozoan debris, interleaved with altered hydrobiotite(?); dolomite 0.15 to 0.25 mm, replaces ooids, replaced by limonite and calcite.

Fossils collected by Bell from 627 feet, Linnarssonella girtyi Walcott, and linguloid type B(?).

SHIFT westward about 750 feet along base of bed containing granule-size grains; continue down in section down bare rock slope.

	Thickness in feet		
	Interval	Cumulative	Feet above base
Welge Sandstone Member: 27 feet thick			
13. Sandstone--medium grained, yellowish- to greenish-gray, calcareous, glauconitic, beds about 8 inches, top foot mostly covered.	3	309	622-625
14. Sandstone--medium grained, moderate brown, two beds.	3	312	619-622
15. Sandstone--fine grained in lower part to medium grained in upper part; from 610 to 617 feet, pale yellowish-orange, rest yellowish-gray; massive, one bedding joint at 617 feet; shale mottles abundant at 605 feet, common in upper 2 feet, a few below 610 feet.	14	326	605-619
SHIFT eastward a few feet across a small fault; continue down in section down bare rock surface.			
16. Sandstone--medium grained; pale yellowish-orange and dark yellowish-orange; mottled from thin, discontinuous, wavy shale films; one bed.	5	331	600-605
SHIFT eastward about 150 feet; continue down in section.			
17. Sandstone--medium to coarse grained, dark yellowish-orange, basal few inches glauconitic.	2	333	598-600
Riley Formation: 598 feet thick			
Lion Mountain Sandstone Member: 61 feet thick			
18. Sandstone--mostly greensand in lower part, glauconite less abundant upward; shale, dusky-yellow, appears to fill burrows; some bright-red hematite.	4	337	594-598

	Description	Thickness in feet: Interval	Cumulative	Feet above base
19.	Limestone and greensand--limestone, coarse-grained, sandy, glauconitic, trilobite coquinite, with clear interstitial calcite that in part may be radial to fossils; greensand about equally quartz and glauconite; from 574 to 577 feet, limestone; from 577 to 580 feet, mostly covered, some greensand; from 580 to 581 feet, limestone, cross-bedded, a few phosphastic brachiopods; from 581 to 588 feet, greensand, some lenticular limestone cross-beds, in part covered; from 588 to 591 feet, mostly limestone, very sandy, cross-bedded, some greensand, glauconite grains in part long and curved, top 2 inches shale, dusky-yellow, glauconitic, sandy, much burrowed; from 591 to 594 feet greensand, somewhat cross-bedded. Thin sectioned at 574, 580, and 590 feet. At 574 feet, limestone--trilobite debris, a few phosphatic brachiopod fragments, much glauconite, some sand and silt included in fine- to coarse-grained authigenic calcite added to abundant pelmatozoan debris; sand very fine to coarse, mostly angular, larger grains rounded, mostly quartz, metamorphic grains abundant, feldspar very scarce; glauconite 0.1 to 0.75 mm, grains rounded to elliptical and lobate, a few curved, in part angular, mostly admixed with calcite; pelmatozoan debris mostly invaded by limonite. At 580 feet, limestone (Pl.13, fig. 5)--glauconite, sand, a few pelmatozoan fragments, much trilobite debris in part in radial calcite cement, in part in a very coarse grained, clear, poikilitic, composite, calcite mosaic; sand mostly quartz, very fine to coarse, rounded, mostly straight extinction, grains from metamorphic source scarce; glauconite 0.1 to 0.5 mm,	20	357	574-594

Description	Thickness in feet: Interval	Cumulative	Feet above base
grains rounded to elliptical and lobate, a few curved, a few clear, mostly cloudy and admixed with calcite; fossil debris invaded by limonite. At 590 feet, limestone--trilobite debris and some sand and glauconite, mostly in a matrix of radial calcite, some coarse-grained, poikilitic calcite; sand fine to coarse, quartz mostly straight extinction, one composite grain; glauconite 0.5 mm, much clouded and altered, grains mostly elliptical, many curved.			
Fossils at 578, 589, and 592 feet, Aphelaspis walcotti Resser; in addition at 598 feet, Dunderbergia variagranula Palmer.			
Fossils collected by Bell from 574 and 590 feet, linguloids types A and B.			
SHIFT eastward 300 feet; continue down in section southward along drain.			
20. Shale--dusky yellow; glauconitic, more so upward; sandy; much burrowed, burrows more sandy and glauconitic than matrix; a few trilobite coquinite cross-beds.	5	362	569-574
Thin sectioned at 573 feet. Limestone--abundant trilobite debris with radial calcite, much calcareous brachiopod(?) debris, numerous phosphatic brachiopod fragments, glauconite, a few intraclasts, some silt and very fine sand mostly in fine-grained authigenic calcite added to abundant pelmatozoan debris, some aphanitic matrix; intraclasts mostly limonitic pebbles, probably dolomite replaced by calcite; silt and sand mostly quartz and feldspar, a few rhombs, twinned grains common; glauconite grains 0.05 to 0.5 mm, in part weathered, cloudy, also borders an intraclast and invades pelmatozoan debris (Pl. 13, fig. 4).			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
21.	Limestone and covered--covered from 537 to 539,540 to 544, 550 to 553, and 566 to 568 feet; iron nodules in soil indicate lower covered interval is greensand. Rest limestone; from 537 to 540 feet, mostly coarse-grained, an inch of fine-grained at top, glauconitic, trilobitic; from 544 to 547 feet, fine-grained, brownish-gray to pale yellowish-brown, silty, in part very sandy, argillaceous, glauconitic, glauconite grains very fine; from 547 to 550 feet, coarse-grained, light to dark yellowish-brown, greenish-gray, light-gray, interstitial calcite radial to fossil fragments, somewhat glauconitic, in part dolomitic, elliptical objects of clay and calcite in part replaced by dolomite, trilobitic; from 553 to 562 feet, coarse-grained, mostly dark yellowish-brown to dark greenish-gray, some yellowish-gray and light olive-gray, sandy, glauconitic, mostly cross-bedded, some yellowish-gray to white, trilobite coquinite cross-beds; from 562 to 565 feet, covered except for 2 thin trilobitic beds from 565 to 566 feet, coarse-grained, sandy, glauconitic, trilobitic; from 568 to 569 feet, sandy, glauconitic, trilobitic. Thin sectioned at 546 and 556 feet. At 546 feet, limestone--glauconite and sand included in fine- to coarse-grained authigenic calcite added to pelmatozoan debris that is strongly invaded by limonite; sand very fine to medium, rounded to angular, mostly quartz with straight extinction, a few grains from a metamorphic source, a few grains of feldspar; glauconite in part much weathered, grains 0.1 to 1 mm, rounded to elliptical, a few admixed with calcite; dolomite about 0.2 to 0.6 mm,	32	394	537-569

Description	Thickness in feet: Interval	Cumulative	Feet above base
replaces pelmatozoan debris, altered to calcite and limonite. At 556 feet, limestone--trilobites with radial calcite and sand in fine-grained, clear calcite mosaic; a few thin sandy beds, sand very fine to coarse, a few grains very coarse, mostly quartz, mostly angular, several grains composite, many grains from a metamorphic source, some feldspar, black opaque grains abundant; glauconite, pelmatozoan debris, and phosphatic brachiopod shells scarce.			
Fossils collected from 537 feet, Llanoaspis undulata Lochman, Llanoaspis undulata granulata Palmer, Coosina cf. C. ariston (Walcott), Tricrepicephalus thoosa (Walcott), and spicule type B; from 548 feet, Coosina cf. C. ariston (Walcott), Opisthotreta depressa Palmer; from 557 feet, Aphelaspis walcotti Resser, Coosia cf. C. albertensis Resser, Crepicephalus perplexus (Palmer), Llanoaspis peculiaris (Resser), Coosina cf. C. ariston (Walcott), and Tricrepicephalus thoosa (Walcott); from 558 feet, Aphelaspis walcotti Resser, Cheilocephalus breviloba (Walcott), Glaphyraspis ornata (Lochman), and spicule type C; from 559 feet, Aphelaspis walcotti Resser, Cheilocephalus minutus Palmer, Homagnostus cf. H. tumidosus Hall & Whitfield, Glaphyraspis ornata (Lochman), Dictyonina perforata Palmer, and spicule type C; from 560 feet, Aphelaspis walcotti Resser and Dictyonina perforata Palmer; from 565 feet, Aphelaspis walcotti Resser and Angulotreta triangularis Palmer.			
Fossils collected by Bell from 556 feet, linguloids types A and B.			
SHIFT about 1,900 feet N. 80° W. to edge of flat 150 feet east of head of a drain; continue down in section southward to drain			

Description	Thickness in feet: Interval	Cumulative	Feet above base
bottom. Because of covered areas and faults beds could not be walked; however, shift is believed to be essentially correct.			
Cap Mountain Limestone Member: 174 feet thick			
22. Limestone--coarse-grained; greenish-gray to light olive-gray, pale to dark yellowish-brown speckled by dark yellowish-green glauconite and dark yellowish-orange dolomite, streaked by yellowish-gray, trilobitic layers; in part oolitic; some intraformational conglomerate, pebbles fine-grained, glauconitic, silty; a few sand grains in some beds; silt mostly detrital feldspar, some authigenic overgrowth, some quartz; stylolites common; beds average 4 to 6 inches.	34	428	503-537
Thin sectioned at 515, 535 and 537 feet. At 515 feet, limestone--trilobite debris with radial calcite, glauconite, intraclasts, dolomite, silt and very fine sand mostly included in fine- to coarse-grained, authigenic calcite added to pelmatozoan debris, some fine-grained calcite matrix; intraclasts granule-size and smaller, very fine grained, silty, glauconitic, micaceous; sand and silt mostly feldspar and quartz, numerous opaque minerals; mica mostly altered biotite, some muscovite and hydrobiotite; glauconite 0.05 to 0.5 mm, rounded to lobate and fragmental, cloudy, in part admixed with calcite, a few grains may be altering from hydrobiotite; fresh dolomite crystals up to 1.5 mm replace pelmatozoan fragments, weathered 0.15-mm rhombs common as replacement of small intraclasts. At 535 feet, limestone--intraclasts, dolomite, glauconite, silt, very fine sand, trilobite debris in part with radial calcite and a few pellets in a very fine to coarse grained, clear calcite			

Description	Thickness in feet: Interval	Cumulative	Feet above base
matrix; intraclasts granule size and smaller, very fine grained, mostly replaced by dolomite; sand and silt mostly feldspar and quartz; glauconite 0.1 to 1.25 mm, lobate to fragmental, "moth-eaten" appearance from admixed calcite, in part weathered and limonitic; dolomite 0.05 to 0.2 mm, replaces intraclasts and matrix, replaced by calcite and admixed limonite; solution along stylolites of large amplitude formed voids. At 537 feet, limestone--abundant trilobite debris, intraclasts, silt and very fine sand mostly in fine- to medium-grained calcite added to pelmatozoan debris; intraclasts granule-size and smaller, aphanitic to fine-grained, slightly to very silty, glauconite scarce,a few replaced by dolomite; silt and sand mostly quartz and feldspar; a little biotite, frayed, altered; dolomite 0.05 to 0.25 mm, replaces cavity fillings in fossils and intraclasts, replaced by calcite and admixed limonite.			
Trilobites abundant; fossils at 507 feet, Crepicephalus australis Palmer, Meteoraspis metra (Walcott), Tricrepicephalus thoosa (Walcott), Opisthotreta depressa Palmer, and spicule type B.			
23. Limestone--mostly coarse-grained, some fine- and medium-grained; from 486 to 492 and 498 to 503 feet, coarse-grained, glauconitic, minutely cross-bedded to wavy bedded, trilobitic, dolomitic, dolomite areas up to 0.5 inch, dark yellowish-orange, in part may be fossil fillings; from 492 to 494 and 495 to 498 feet, fine-grained, light olive-gray, upper interval weathers moderate yellowish-brown; from about 494 to 495 feet, coarse-grained, many objects similar to those described	17	445	486-503

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	from "bronze beds," many small, dark yellowish-orange objects of dolomite, a 15-inch bed. Fossils at 486 feet, Tricrepicephalus thoosa (Walcott) and Kinsabia variegata Lochman.			
24.	Limestone--mostly fine- to medium-grained, some coarse-grained; dark to pale yellowish-brown to light olive-gray and dark greenish-gray, some grayish-orange mottles; glauconitic; slightly micaceous; mostly silty, some beds verge on siltstone, silt mostly weathered detrital feldspar with authigenic overgrowth, a few rhombs, some quartz; intraformational conglomerate at 476 feet; a bronze bed from 470 to 471 feet; trilobitic; beds mostly 6 inches and less. Thin sectioned at 475 and 480 feet. At 475 feet, limestone--trilobite and some enlarged pelmatozoan debris, a few phosphatic brachiopod fragments, dolomite, glauconite, sand, silt, and indistinct intraclasts in a fine- to coarse-grained calcite mosaic; intraclasts pebble- to granule-size, medium-grained, very glauconitic, sandy and silty; sand fine and very fine, mostly quartz, a few grains composite, some authigenically enlarged, some feldspar in smaller sizes; a few flakes of hydrobiotite and muscovite; glauconite 0.1 to 0.3 mm, angular to rounded, some admixed calcite, in part replaces pelmatozoan debris; dolomite 0.1 to 0.2 mm, mostly fresh, replaces matrix, intraclasts, cavity fillings in fossils, in part replaced by calcite and admixed limonite. At 480 feet, limestone or siltstone--either a very silty limestone or a very calcitic siltstone; very abundant silt and very fine sand, some glauconite and mica in a mosaic of fine-grained, poikilitic, fairly clear calcite; silt and sand mostly	21	466	465-486

Description	Thickness in feet: Interval	Cumulative	Feet above base
feldspar and quartz, a few rhombs, opaque minerals common; mica mostly altered biotite, some hydrobiotite and muscovite; glauconite 0.05 mm and less, angular; dolomite 0.1 mm, in matrix, scarce, replaced by a mosaic of calcite and admixed limonite.			
Fossils are abundant trilobites and a few phosphatic brachiopods; from 468 feet, Proteillaenus sp., Coosella beltensis Lochman, Densonella sp., Kingstonia (Ucebia) pontotocensis (Lochman), Tricrepicephalus thoosa (Walcott), and Opisthotreta depressa Palmer.			
SHIFT southeastward about 150 feet along beds; continue down in section southwestward to bottom of drain.			
25. Limestone and siltstone--very silty limestone to very calcareous siltstone; mostly fine-grained; moderate-brown to pale yellowish-brown, some mottled dark yellowish-orange to light-brown; silt mostly detrital feldspar with authigenic overgrowth, a few rhombs, some quartz; slightly glauconitic and dolomitic; upper foot a "bronze" bed with miniature wavy bedding or cross-bedding; at 442 feet a poorly exposed sandy "bronze" bed possibly as much as 3 feet thick; from 431 to 436 feet, coarse-grained, greenish cast from glauconite, trilobitic, a few intraformational conglomerate pebbles; poorly exposed except lower 5 feet.	34	500	431-465
Thin sectioned at 433 and 464 feet. At 433 feet, limestone--a few phosphatic brachiopod fragments and intraclasts, in part in a fine-grained mosaic of calcite containing ghosts of trilobite and pelmatozoan			

Description	Thickness in feet: Interval	Cumulative	Feet above base
debris, in part in a very fine grained to microgranular calcite mosaic in part replaced by dolomite; silt and glauconite very scarce; dolomite 0.1 to 0.75 mm, mostly replaces matrix, in part replaces fossil debris and intraclasts, some limonite stain and calcite replacement. At 464 feet, limestone--numerous spicules (type B) (Pl.13, fig. 3) replaced by limonite and a few intraclasts and some trilobite debris in a fine- to coarse-grained, clear calcite matrix formed by secondary enlargement of pelmatozoan debris; intraclasts so weathered and heavily impregnated by limonite that original character is not apparent; a sandy bed at one end of thin section, sand very fine, mostly feldspar, a few rhombs, some quartz and glauconite, matrix mostly 0.05-mm dolomite replaced by calcite and admixed limonite.			
Phosphatic brachiopods are common.			
Fossils collected by Palmer from 450 feet, Coosella beltensis Lochman, Kormagnostus simplex Resser, Pseudagnostina? nordicus (Lochman), Kinsabia variegata Lochman, and spicule type B.			
Fossils collected by Bell from 433 feet, paterinid fragment, Kinsabia variegata Lochman, and spicule type B.			
SHIFT southeastward 900 feet across 3 faults along base of thin-bedded "bronzy" zone at 426 feet; continue down in section southwestward to drain bottom.			
26. Limestone--medium-grained; moderate-brown, streaked along bedding by yellowish-brown calcite, some dark yellowish-orange	5	505	426-431

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	mottles of calcareous, slightly glauconitic, very limonitic clay; very sandy, many pronged and elongate objects with oolitic overgrowth, these and sand grains coated by bronzy iron oxide; ooids common; beds 1 to 4 inches. Thin sectioned at 429 and 430 feet. At 429 feet, limestone--unidentified fossils (possibly spicule type B) in part replaced by limonite, some trilobite and secondarily enlarged pelmatozoan debris, and a few intraclasts in a very fine- to medium-grained matrix; intraclasts very limonitic, probably originally about 0.1 mm dolomite, later replaced by calcite; spicule type B(?) has preserved septate structure between outer wall and central spicule-like structure. At 430 feet, siltstone verging on sandstone--silt and very fine sand and some phosphatic brachiopod debris in very coarse-grained poikilitic calcite, up to 2 mm; silt and sand mostly quartz and feldspar, opaque grains common; a few flakes of muscovite; irregular patches and isolated rhombs of dolomite common, dolomite 0.15 to 0.3 mm, replaced by mosaic of calcite and admixed limonite. Fossils are a few trilobites. Fossils collected by Bell from 429 feet, large "bronze" spicule type B.			
27.	Limestone and siltstone--very silty limestone to very calcareous siltstone; mostly fine-grained, a few medium- and coarse-grained beds; weathers various shades of moderate-brown, grayish-orange and pale yellowish-brown, in part mottled by dark yellowish-orange, dark yellowish-brown, and lighter browns, fresh rock slightly lighter in color; some beds sandy; silt and	60	565	366-426

Description	Thickness in feet: Interval	Cumulative	Feet above base
very fine sand mostly detrital feldspar, in part much weathered, some authigenic overgrowth, a few rhombs, quartz abundant; "bronze" beds from 380 to 381, 386 to 387, and 400 to 401 feet, moderate-brown, cross-bedded, sandy, sand coated by bronzy iron oxide; slightly micaceous; beds mostly 6 inches or less, seldom as much as a foot, massive and smooth surfaced on steep slopes and drain bottoms, bedding minute, wavy; concretions pea- to walnut-size may be from weathering.			
Thin sectioned at 367, 402, and 425 feet. At 367 feet, limestone--numerous spicules type B (Pl.13, Fig. 1), much secondarily enlarged pelmatozoan debris, and a few trilobite fragments and grains of glauconite in a very fine to medium grained, calcite mosaic; sand very fine to medium, angular, coated by limonite, mostly quartz with straight extinction, one grain composite; fossil debris in part replaced by very fine grained dolomite, in turn replaced by calcite and admixed limonite; spicules either replaced or coated by limonite. At 402 feet, sandstone verging on siltstone--very fine sand and silt composed mostly of quartz and feldspar, some opaque minerals in very coarse grained poikilitic calcite, up to about 2 mm across; irregular patches of dolomite common, replaced by calcite and admixed limonite. At 425 feet, siltstone verging on sandstone--silt and very fine sand, mostly quartz and feldspar in very coarse grained poikilitic calcite (Pl.13, fig. 2), up to about 1.5 mm, surrounding 1- to 5-mm areas cemented mostly by silica; feldspar rhombs common; some altered biotite, a few flakes of			

Description	Thickness in feet: Interval	Cumulative	Feet above base
muscovite; dolomite common especially in calcitic part, mostly replaced by calcite and admixed limonite. Phosphatic brachiopods common at several levels.			
28. Sandstone--very calcareous, somewhat glauconitic, beds mostly 4 inches and less. Thin sectioned at 363 feet. Sandstone--very fine to very coarse grained, larger grains mostly well-rounded, rest mostly angular; calcite cement, fine to very fine grained; phosphatic brachiopod fragments, intraclasts of fine to very fine grained sandstone, and irregular stringers of fine to very fine grained dolomite replaced by calcite and admixed limonite common; mostly quartz, straight extinction, bubble trains numerous, grains from a metamorphic source common, a few composite grains. Phosphatic brachiopods abundant at several levels.	3	568	363-366
Hickory Sandstone Member: 363 feet thick			
29. Shale and sandstone--very poorly exposed, recessive.	3	571	360-363
SHIFT 300 feet southeastward along phosphatic brachiopod-bearing intraformational conglomerate; continue down in section southwestward.			
30. Sandstone--medium- to coarse-grained; various shades of moderate-brown, moderate yellowish-brown and dark yellowish-orange to pale yellowish-orange; in part calcareous and argillaceous; grains spherical to subrounded; at 334 feet, coated by limonite, also a few ooids(?)	29	600	331-360

Description	Thickness in feet Interval	Cumulative	Feet above base
of interlayered carbonate and limonite; better exposed ledges mostly intraformational conglomerate; poorly exposed, recessive intervals may be shaly.			
Thin sectioned at 334 and 343 feet. At 334 feet, sandstone--very fine to coarse grained, well-rounded, mostly coated by limonite, numerous phosphatic brachiopod fragments, spicules type B and/or pelmatozoan debris heavily impregnated by limonite, and siltstone intraclasts in limonite or limonite and admixed carbonate; intraclasts of small pebble and granule size, much very fine sand and silt in a carbonate matrix, feldspar in part as rhombs abundant; mostly quartz, straight extinction, a few grains from a metamorphic source, composite grains scarce; carbonate originally very fine grained dolomite later replaced by an admixture of calcite and limonite. At 343 feet, sandstone--very fine to very coarse grained, a few granules, sand well-rounded to angular, phosphatic brachiopod fragments and siltstone intraclasts common, some irregular patches of dolomite replaced by limonite-impregnated calcite and limonite with colloform structure, some clear fine to very fine grained calcite and limonite matrix; mostly quartz, straight extinction, bubble trains numerous, grains from a metamorphic source common, an igneous rock fragment (Pl.12, figs. 5,6), a few composite grains a couple of which are sutured quartz mosaics showing strong lineation, microcline common.			
Phosphatic brachiopods in intraformational conglomerate.			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
31.	Sandstone--medium- to coarse-grained, very dusky red, beds mostly about 6 inches. Phosphatic brachiopods common; fossils at 324, 325, and 327 feet, Cedarina cordillerae(Howell and Duncan).	11	611	320-331
32.	Sandstone--mostly medium, some coarse-grained; various shades of moderate-brown, some reddish-brown and dark yellowish-brown; coarser beds mostly phosphatic brachiopod-bearing intraformational conglomerate; poorly exposed from 285 to 293 feet, a few cross-beds, ripple marks in upper part and from 297 to 305 feet; well-exposed from 277 to 285 feet, several intraformational conglomerate beds, cross-bedded; well-exposed from 293 to 297 feet, intraformational conglomerate; from 295 to 296 feet, beds mostly a foot and less; well-exposed from 305 to 320 feet. Phosphatic brachiopods common to abundant at many levels.	43	654	277-320
33.	Covered--some thin-bedded, shaly float in soil.	5	659	272-277
34.	Sandstone--medium- to coarse-grained, dark yellowish-orange to light-brown, beds about 6 inches. Phosphatic brachiopods numerous.	6	665	266-272
35.	Covered.	6	671	260-266
36.	Sandstone and shale--sandstone medium- to coarse-grained; light greenish-gray mottled moderate yellowish-brown, some specks dark yellowish-orange; in part	15	686	245-260

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	slightly calcareous; glauconitic, recessive intervals verge on greensand; intraformational conglomerate common, pebbles and granules very fine grained sandstone; indurated to friable; beds mostly 3 to 6 inches, one at 250 feet about 1 foot. Shale greenish-gray, poorly exposed.			
	Thin sectioned at 250 feet. Sandstone--very fine to very coarse grained, grains fairly well-rounded; phosphatic brachiopod fragments, intraclasts of very fine grained sandstone and glauconite mostly in calcite cement; a few small areas cemented by dolomite now replaced by calcite and admixed limonite; quartz mostly straight extinction, bubble trains common, a few composite grains and grains from a metamorphic source, a few microcline grains; glauconite, slightly smaller than associated sand, rounded, mostly much weathered, some admixed calcite.			
	Phosphatic brachiopods numerous in harder beds; fossils at 252 feet, Bolaspidella burnetensis (Walcott).			
37.	Covered (section crosses road in this interval, culvert at 225 feet).	22	708	223-245
38.	Sandstone and shale--sandstone medium grained, glauconitic, beds 8 inches and less, separated by shale and thin sandstone beds.	5	713	218-223
39.	Covered.	2	715	216-218
40.	Sandstone--medium-grained, grayish-orange to dark greenish-gray, glauconitic,	11	726	205-216

Description	Thickness in feet: Interval	Cumulative	Feet above base
in part thin-bedded and argillaceous, a few beds up to 1 foot. Phosphatic brachiopods common in several beds.			
SHIFT uphill 50 feet across small fault; continue down in section southwestward.			
41. Sandstone--medium- to coarse-grained, dark yellowish-orange to moderate yellowish-brown, intraformational conglomerate at top and near middle, cuneiform markings in float, beds about 1 foot. Phosphatic brachiopods common throughout, better preserved in intraformational conglomerate.	10	736	195-205
42. Sandstone--mostly medium-grained, a few coarse- and fine-grained beds; yellowish-gray, pale yellowish-orange, moderate yellowish-brown, and pale yellowish-brown; a few vertical tubes; massive, beds indistinct; slickensides and narrow zones of silicification indicate some deformation, a small fault in upper part downthrown to east.	43	779	152-195
43. Shale and sandstone--poorly exposed, yellowish-gray, 2 feet of section cut out by fault.	3	782	149-152
44. Sandstone--mostly medium-grained, some fine- and coarse-grained, a few granules; grayish-orange, pale to dark yellowish-orange and moderate yellowish-brown; microcline common, weathered; quartz angular to subrounded, rough; massive, beds up to 5 feet. Thin sectioned at 140 feet. Sandstone--bimodal, mostly very fine sand and silt, a	14	796	135-149

Description	Thickness in feet: Interval	Cumulative	Feet above base
sprinkling of fine to very coarse sand; finer fraction about one-quarter weathered feldspar, coarser fraction mostly quartz, grains subrounded, composite grains and grains from a metamorphic source scarce, a few large microcline grains.			
45. Sandstone--medium-grained, dark yellowish-orange to moderate yellowish-orange, beds 6 to 12 inches, in part poorly exposed.	4	800	131-135
SHIFT southeastward down slope to drain, continue down drain to base of section. Fence is at about 132 feet in section.			
46. Sandstone--medium- to coarse-grained, yellowish-gray to dark yellowish-orange and moderate yellowish-brown, grains poorly sorted, cross-bedded, massive.	12	812	119-131
47. Covered.	3	815	116-119
48. Sandstone--medium- to coarse-grained, grayish-orange to dark yellowish-orange, grains poorly sorted, cross-bedded, beds 4 to 24 inches.	4	819	112-116
From 115 to 205 feet section is marked both in drain and where exposures are better.			
49. Sandstone and shale--three intervals of shale, moderate brown, very sandy, very thinly bedded; separated by sandstone medium-grained, grayish-orange, an upper 3-inch bed and a lower 6-inch bed.	5	824	107-112
50. Sandstone--medium- to coarse-grained; mostly light-brown, some yellowish-gray, grayish-orange, moderate yellowish-brown, and dark yellowish-brown; grains poorly sorted, up to 0.25 inch in some beds; much cross-bedded, mostly massive, beds up to	46	870	61-107

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	several feet, few as little as a foot.			
51.	Covered.	2	872	59-61
52.	Sandstone--medium- to coarse-grained, grayish-orange to dark yellowish-orange and light-brown, grains poorly sorted, much cross-bedded, thickly bedded.	7	879	52-59
53.	Covered.	2	881	50-52
54.	Sandstone--medium- to coarse-grained, pinkish-white to yellowish-orange and light-brown, cross-bedded, beds mostly a foot or more.	11	892	39-50
55.	Covered.	3	895	36-39
56.	Sandstone--medium- to coarse-grained, light-brown to reddish-brown, cross-bedded.	2	897	34-36
57.	Covered.	3	900	31-34
58.	Sandstone--medium-grained, light-brown.	1	901	30-31
59.	Covered.	1	902	29-30
60.	Sandstone--medium- to coarse-grained, moderate yellowish-brown to moderate-brown.	2	904	27-29
61.	Covered.	2	906	25-27
62.	Sandstone--medium- to coarse-grained, white to yellowish-brown, grains poorly sorted, one bed.	1	907	24-25
63.	Shale--dark reddish-brown, a few sandy streaks.	1	908	23-24
64.	Sandstone and conglomerate--sandstone mostly coarse-grained, some medium-grained, quartz pebbles up to 0.75	21	929	2-23

Description	Thickness in feet: Interval	Cumulative	Feet above base
inch; moderate reddish-brown, moderate reddish-orange, pale reddish-brown; at 10 feet a 6-inch bed dark reddish-brown; above 15 feet pale to dark yellowish-orange and white to pinkish-gray; grains poorly sorted; microcline abundant up to 18 feet, 0.25-inch fragments; cross-bedded; massive; numerous fractures with little displacement; base of interval at water level on a vertical fault face.			
SHIFT a few feet across fault and continue down in section. A few beds may be cut out by fault.			
65. Sandstone and conglomerate--sandstone coarse-grained, quartz pebbles up to 0.5 inch; microcline fragments up to 0.25 inch; dark yellowish-brown to near moderate reddish-orange, speckled by moderate reddish-brown microcline, one bed; conglomerate at base, aplite and quartz fragments up to 2 inches.	2	931	0-2
The section rests on pale reddish-brown aplite containing stringers of quartz and moderate reddish-brown microcline in crystals several inches in size. The aplite is a sill in grayish olive-green to dark greenish-black amphibolite in the Packsaddle Schist that strikes N. 50° W., dips 80° NE.			

Table 39. Heavy mineral frequency counts, Little Llano River section, San Saba County, Texas (counts made by T. R. Walker).

Member	Sample Interval (feet)	Zircon					Tourmaline				
		Total	Clear	Zoned	Dusty	Malacon	Total	Brown	Green	Blue	Black
Welge Sandstone	605-610	26.7	19.3	1.7	5.7	0.0	1.0	0.0	0.7	0.3	0.0
Lion Mountain Sandstone	585-590	5.7	3.0	0.3	2.3	0.0	0.0	0.0	0.0	0.0	0.0
	540-545	4.3	3.3	0.3	0.7	0.0	0.7	0.7	0.0	0.0	0.0
Cap Mountain Limestone	450-455	7.0	4.7	0.3	1.7	0.3	0.0	0.0	0.0	0.0	0.0
	395-400	19.3	10.0	2.7	6.7	0.0	0.0	0.0	0.0	0.0	0.0
Hickory Sandstone	350-355	23.0	15.0	1.0	6.7	0.3	1.3	0.7	0.7	0.0	0.0
	295-300	13.7	9.3	1.3	3.0	0.0	2.0	1.3	0.3	0.0	0.3
	245-250	25.3	14.3	1.7	9.3	0.0	3.3	2.3	1.0	0.0	0.0
	180-185	41.3	25.0	2.3	13.7	0.3	7.0	5.7	1.3	0.0	0.0
	145-150	31.3	16.7	3.3	11.3	0.0	7.7	4.0	3.3	0.3	0.0
	95-100	30.3	16.7	2.0	11.3	0.3	9.3	4.7	4.0	0.0	0.7
	45-50	32.3	19.3	2.3	10.0	0.7	6.7	3.7	3.0	0.0	0.0
	0-5	5.7	3.7	0.7	1.7	0.0	2.7	1.0	1.7	0.0	0.0

Table 39
(continued)

Member	Sample Interval (feet)	Garnet			Rutile			Other Minerals				
		Total	Colorless	Pink	Total	Amber	Foxy red	Anatase	Altered ilmenite	Leucoxene	Black opaque	Epidote
Welge Sandstone	605-610	0.0	0.0	0.0	0.7	0.7	0.0	11.7	52.0	7.0	1.0	0.0
Lion Mountain Sandstone	585-590	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.0	2.0	63.0	0.0
	540-545	0.0	0.0	0.0	0.3	0.3	0.0	4.0	43.2	2.7	44.7	0.0
Cap Mountain Limestone	450-455	0.0	0.0	0.0	0.0	0.0	0.0	7.3	61.0	12.3	9.0	0.0
	395-400	0.0	0.0	0.0	1.0	1.0	0.0	14.0	54.3	8.3	3.0	0.0
Hickory Sandstone	350-355	2.7	2.0	0.7	1.3	1.0	0.3	0.7	37.3	2.3	31.3	0.0
	295-300	2.0	1.7	0.3	1.0	0.7	0.3	0.7	48.3	1.0	31.3	0.0
	245-250	0.7	0.7	0.0	5.3	3.3	2.0	0.0	39.3	3.0	23.0	0.0
	180-185	0.7	0.3	0.3	2.7	1.7	1.0	19.3	4.7	21.0	3.3	0.0
	145-150	1.0	0.7	0.3	4.3	3.0	1.3	15.0	5.0	34.7	1.0	0.0
	95-100	0.3	0.3	0.0	4.0	2.3	1.7	2.3	43.0	10.3	0.3	0.0
	45-50	0.3	0.0	0.3	3.7	1.3	2.3	17.7	20.0	18.0	0.7	0.0
	0-5	1.7	1.7	0.0	0.3	0.3	0.0	0.3	36.3	7.3	45.3	0.3

Table 40. Insoluble residue content, Little Llano River section, San Saba County, Texas.

Feet above base	Percent residue	Feet above base	Percent residue	Feet above base	Percent residue
665-672	4.5	560-565	10.7	453-460	77.3
660-665	6.8	555-560	29.5	450-455	83.9
665-660	6.3	550-555	23.4	440-445	12.6
650-655	5.6	545-550	37.1	435-440	25.3
645-650	11.0	540-545	59.1	430-435	8.0
640-645	8.8	535-540	11.8	425-430	41.8
635-640	13.4	530-535	12.2	420-425	68.3
630-635	17.6	525-530	10.7	415-420	66.5
625-630	34.7	520-525	12.0	410-415	72.0
620-625	73.7	515-520	10.9	405-410	66.8
615-620	98.6	510-515	11.6	400-405	75.6
610-615	99.6	505-510	24.9	395-400	80.1
605-610	98.5	500-505	15.6	390-395	92.8
599-605	92.3	495-500	21.4	385-390	86.2
595-599	91.4	490-495	23.5	380-385	79.2
590-595	66.1	485-490	23.0	375-380	60.8
585-590	49.3	480-485	73.9	370-375	54.0
580-585	4.2	475-480	32.2	365-370	58.3
575-580	9.4	470-475	26.9	360-365	79.5
570-575	87.2	465-470	41.7	355-360	84.7
565-570	34.5	460-465	52.8	350-355	82.7

Table 40
(continued)

Feet above base	Percent residue	Feet above base	Percent residue	Feet above base	Percent residue
345-350	80.2	200-205	95.8	100-105	96.2
340-345	78.7	195-200	95.4	95-100	98.6
355-340	96.8	190-195	98.3	90-95	96.5
330-335	93.3	185-190	100.0	85-90	98.6
325-330	95.2	180-185	96.3	75-80	100.0
320-325	93.8	175-180	100.0	70-75	100.0
315-320	91.2	170-175	99.4	65-70	97.3
310-315	93.7	165-170	100.0	60-65	95.6
305-310	91.2	160-165	98.5	55-60	100.0
300-305	96.8	155-160	97.6	50-55	100.0
295-300	96.1	150-155	100.0	45-50	98.0
290-295	96.4	145-150	99.8	40-45	99.8
280-285	92.1	140-145	99.8	35-40	100.0
275-280	94.3	135-140	98.6	30-35	98.6
270-275	97.0	130-135	97.7	25-30	95.1
265-270	93.4	125-130	99.6	20-25	96.4
245-250	76.4	120-125	98.6	15-20	95.3
220-225	93.2	115-120	97.7	10-15	94.3
215-220	97.0	110-115	95.3	5-10	95.1
210-215	97.0	105-110	92.5	0-5	99.8
205-210	95.0				

Carter Ranch Stratigraphic Section, Llano County

The Carter Ranch section of Bridge, Barnes, and Cloud (1947, Pl. 1) in northeastern Llano County was reexamined during August 1947, and a section that appears to be slightly better exposed was found mostly to the west of the original section. This section is about 4 miles airline north of Lone Grove and three-fourths of a mile east of Little Llano River. The bottom of the section, at the head of a minor drain, is 650 feet north of a county road at a point 1,800 feet east of where the road crosses Little Llano River. The top of the section is 3,600 feet north-northeast of the bottom of the section at the highest point near the edge of a prominent scarp, and exactly 1 mile due northeast from the road crossing of Little Llano River (Part 1, Pl. 7, fig. 15).

The Carter Ranch section was measured, paint spots placed at 5-foot intervals, and described by Barnes August 13 to 15, 1947, while Bell collected fossils. Additional fossil collections were made by Palmer during the spring of 1948.

This section was described before the Rock Color Chart (1948) was available; the section later became inaccessible. Since it was not chip-sampled, the color terminology used does not compare with that for other sections. The color descriptions for this section compare with those used by Barnes (Cloud and Barnes, 1948).

Fossil identifications in the Carter Ranch section are by Bell and the lists were updated during June 1969.

Thicknesses of units in the Carter Ranch section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Moore Hollow Group (1,015 feet measured)		
Wilberns Formation (398 feet measured)		
San Saba Member (75 feet measured)		
Calcitic facies	75+	940-1,015
Point Peak Member	160	780-940
Morgan Creek Limestone Member	136	644-780
Welge Sandstone Member	27	617-644
Riley Formation (617 feet)		
Lion Mountain Sandstone Member	40	577-617
Cap Mountain Limestone Member	239	338-577
Hickory Sandstone Member	338	0-338

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Calcitic San Saba exposed on a dip slope above the top of the section was not included since its thickness was difficult to estimate. Go down in section down scarp in a direction about S. 40° W.			
Moore Hollow Group: 1,105 feet described			
Wilberns Formation: 398 feet described			
San Saba Member: 75 feet described			
Calcitic facies: 75 feet described			
1. Limestone--fine-grained to aphanitic; dark-beige mottled by cinnamon-brown; beds a few inches to 2 feet or more, lip of bluff is at 1,000 feet, beds above thinner than those below; girvanella abundant in some beds, a few are silicified.	53	53	962-1,015
2. Covered--possibly shale.	12	65	950-962
3. Limestone--fine-grained to aphanitic, dark-beige mottled by cinnamon-brown; mottles weather in relief; girvanella abundant, many silicified; beds a few inches to more than 2 feet.	10	75	940-950
Point Peak Member: 160 feet thick			
4. Limestone and shale--recessive, exposed only in a few places, thin-bedded.	2	77	938-940
5. Covered.	9	86	929-938
6. Limestone--granular, top part oolitic, numerous fossil fragments and pellets (?), one bed.	2	88	927-929
7. Covered--except for some shale near top.	2	90	925-927
8. Limestone--greenish-gray, very glauconitic, oolitic, one bed.	1	91	924-925

	Description	Thickness in feet: Interval	Cumulative	Feet above base
9.	Covered.	2	93	922-924
10.	Limestone--fine-grained, dark gray, glauconitic, 2-inch beds.	1	94	921-922
11.	Covered.	4	98	917-921
12.	Limestone--fine-grained, dark gray, glauconitic, 2-inch beds.	1	99	916-917
13.	Covered.	3	102	913-916
14.	Limestone--granular, oolitic, some glauconite.	1	103	912-913
15.	Covered--probably mostly shale, much calcareous shale, and shaly limestone float.	14	117	898-912
16.	Limestone--granular, beige and darker, in part oolitic, slightly glauconitic.	1	118	897-898
17.	Covered--float covers hillside as follows: calcareous shale fragments most abundant; thin limestone plates, non- to very glauconitic; limestone intraformational conglomerate; dolomitized stromatolites up to 3 feet in diameter with pitted surfaces, pits about 0.5 inch in diameter. Fossils collected by Bell from 800 to 805 feet, odd acrotretoid(?), and *Plectotrophia* sp.; from 815 to 820 feet, *Plectotrophia alata* (Walcott); from 840 to 850 feet, hexactinellid spicules; from 870 to 880 feet, hexactinellid spicules and *Billingsella* sp.	117	235	780-897
	Morgan Creek Limestone Member: 136 feet thick			
18.	Limestone--granular, brownish-gray, glauconitic, alternate nodular and massive layers.	5	240	775-780

Description	Thickness in feet: Interval	Cumulative	Feet above base
SHIFT northwestward along strike 550 feet; continue down in section southward along drain.			
19. Limestone--mostly nodular, argillaceous, poorly exposed; near middle two beds granular, greenish-gray, glauconitic.	8	248	767-775
20. Limestone--granular, greenish-gray, glauconitic, two beds separated by a thin recessive interval.	2	250	765-767
Fossils collected by Bell from 765 feet, Drumaspis texana Resser, Angulotreta microscopica (Shumard), and linguloid type B.			
21. Limestone--granular, brownish- to greenish-gray, glauconitic, thin-bedded, some variation in hardness, softer beds recessive, poorly exposed.	7	257	758-765
22. Limestone--granular, greenish-gray, glauconitic, forms distinct ledge around hillside, beds up to 18 inches thick.	7	264	751-758
23. Limestone--shaly, poorly exposed.	3	267	748-751
24. Limestone--granular, greenish-gray, glauconitic, fossiliferous, forms a ledge, two beds.	2	269	746-748
25. Limestone--shaly, weathers recessive.	2	271	744-746
Fossils collected by Bell from 743 to 747 feet, Angulotreta microscopica (Shumard), linguloid type B, Sinuella minuta Knight, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, Idahoia lirae (Frederickson), var. A Bell			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	in Bell and Ellinwood, Ptychaspis bullasa Lochman and Hu, Saratogia americana (Lochman and Hu), Taenicephalina globula Lochman and Hu, Wilbernia cf. W. diademata (Hall), and Sinuella minuta Knight.			
26.	Limestone--granular, greenish-gray to brownish-gray, glauconitic, very fossiliferous, foot or less beds alternate with recessive nodular beds.	8	279	736-744
27.	Limestone--nodular, shaly, poorly exposed; one 4-inch bed near middle medium-gray, glauconitic.	6	285	730-736
	Fossils collected by Bell from 730 feet, Billingsella texana Bell, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Taenicephalus sp., and Sinuella sp.			
28.	Limestone--granular, brownish-gray, slightly glauconitic, fossiliferous, one bed.	1	286	729-730
29.	Covered--except for one 6-inch limestone bed near middle.	5	291	724-729
30.	Limestone--granular, brownish-gray, slightly glauconitic, fossiliferous, one bed.	1	292	723-724
31.	Covered--except for nodular, soft, shaly limestone in top foot exposed beneath an overhang.	10	302	713-723
32.	Limestone--granular, brownish-gray, slightly glauconitic, forms a distinct ledge around hillside, beds average about 6 inches.	4	306	709-713
	Fossils collected by Bell from 711 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella aff. B. texana Bell, Orygmaspis llanoensis			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	(Walcott), Taenicephalus shumardi (Hall), and Wilbernia halli Resser, var. A Ellinwood.			
33.	Limestone--granular, poorly exposed, nodular, alternate glauconitic and shaly beds. Fossils collected by Bell from 703 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella coloradoensis (Shumard), and Pelagiella sp.	9	315	700-709
34.	Covered--except for a 6-inch limestone bed at 697 feet, light gray, brachiopod coquinite. Fossils collected by Bell from 695 feet, Angulotreta aff. A. microscopica, micromitrid, linguloids types A and B, Comanchia amplooculata (Frederickson), Irvingella major Ulrich and Resser, and Sulcocephalus candidus (Resser); from 697 feet, Angulotreta microscopica (Shumard), Angulotreta microscopica (Shumard), var. digitalis Bell, linguloid type B, Eoorthis indianola (Walcott), Eoorthis remnicha (Winchell), Irvingella major Ulrich and Resser, and Parabolinoides contractus Frederickson.	5	320	695-700
35.	Limestone--coarse- to fine-grained, pinkish-gray to medium-gray with greenish tint, glauconitic, wavy bedding, beds mostly 1 to 3 inches, some up to 8 inches. Fossils collected by Bell from 687 feet, Camaraspis convexa (Whitfield) and Linnarssonella girtyi Walcott.	17	337	678-695
36.	Limestone--mostly coarse-grained, some fine-grained near top, pinkish-gray, a few ooids at 670 feet, glauconite, wavy bedding, beds mostly under a foot, poorly exposed.	18	355	660-678

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Fossils collected by Bell from 674 feet, Linnarssonella girtyi Walcott, linguloid type B, Elvinia roemeri (Shumard), Iddingsia sp., Kindbladia affinis (Walcott), and Plataspella anatina (Resser).			
37.	Limestone--coarse-grained; various shades of dull red in part mottled by brown limonite and by areas of light gray calcite, some beds pinkish-gray; very sandy at base, less sandy upward; glauconitic; wavy bedding, beds 2 to 24 inches.	16	371	644-660
	Fossils collected by Bell from 658 to 660 feet, Plataspella sp. fragments, Kindbladia sp., Linnarssonella girtyi Walcott, ornamented linguloid, and unidentified fragment of free cheek.			
	Welge Sandstone Member: 27 feet thick			
38.	Sandstone--mostly fine- to medium-grained; variegated in shades of dull red, ocherous-brown, and green; calcareous, more so upward; glauconitic; grains well-rounded, rough, mostly quartz, up to 0.25 inch on top surface; beds up to 6 inches, poorly exposed.	7	378	637-644
39.	Sandstone--fine-grained; yellowish-brown to beige, some orange mottled, upper surface coated by dark reddish-brown limonite; grains well-rounded, rough, well-sorted, quartz; some calcareous cement; massive.	6	384	631-637
40.	Sandstone--medium-grained, beige or slightly darker, calcareous, grains well-rounded, fairly smooth, poorly sorted quartz; massive, weathers with a cavernous surface.	2	386	629-631

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Bell from 629-630 feet, Linnarssonella girtyi Walcott, linguloid fragments, Cheilocephalus aff. C. stcroixensis Berkey, Dunderbergia n. sp., Elburgia aff. E. granulosa (Hall and Whitfield) and Pseudosaratogia aff. P. magna Wilson.			
41. Sandstone--fine-grained; dull-red; mottled; grains rounded, rough, well-sorted, quartz; glauconitic; massive.	6	392	623-629
42. Sandstone--fine-grained; yellowish-brown to beige, some orange mottles; grains rounded, rough, well-sorted, quartz; massive.	6	398	617-623
Riley Formation: 617 feet thick Lion Mountain Sandstone Member: 40 feet thick			
43. Sandstone--dark-green, very glauconitic, friable, poorly bedded.	7	405	610-617
NOTE: Bell was of the opinion that the sample from 609 to 611 feet is Welge because of large clay chunks, and what he considered to be reworked glauconite from the Lion Mountain.			
44. Sandstone, shale, and limestone--sandstone in part calcareous, indurated, in part friable and up to roughly half glauconite, quartz sand fine to medium, rounded, rough, in part reconstituted; some beds mostly olive-green shale, sandy, glauconitic; limestone, white, trilobite coquinite.	16	421	594-610
Fossils collected by Bell from 595 feet, linguloid type B, Aphelaspis sp., Pseudosaratogia sp., and Dytremacephalus aff. D. granulosus Palmer; from 597 feet, paterinid			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	fragments, linguloids types A and B, Cheilocephalus brevilobus (Walcott), Dytremacephalus aff. D. granulosus Palmer, and Pseudosaratogia sp.			
	Fossils collected by Palmer from 596 and 600 feet, linguloids types A and B; from 604 feet, linguloids types A and B, and paterinid fragments.			
45.	Sandstone--medium-grained, calcareous, very glauconitic, near base some small patches of trilobite coquinite, one bed.	8	429	586-594
46.	Covered--probably glauconitic sandstone.	9	438	577-586
	Cap Mountain Limestone Member: 239 feet thick			
47.	Limestone--granular, green, sandy, very glauconitic, one bed.	2	440	575-577
	Phosphatic brachiopods common.			
48.	Covered.	1	441	574-575
49.	Limestone--coarse-grained, greenish-gray, glauconitic, one bed.	1	442	573-574
	Fossils collected by Bell from 573 feet, Aphelaspis sp., Angulotreta triangularis Palmer, and linguloids types A and B.			
50.	Mostly covered.	8	450	565-573
	Fossils collected by Palmer from 572 feet, Angulotreta triangularis Palmer and linguloids types A and B.			
51.	Limestone--granular, greenish-gray, sandy, very glauconitic, poorly exposed, very fossiliferous.	5	455	560-565

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Fossils collected by Palmer from 563 feet, linguloid type A and *Angulotreta triangularis* Palmer.			
52.	Mostly covered.	9	464	551-560
	Fossils collected by Palmer from 557 feet, *Angulotreta triangularis* Palmer, micromitrid fragments, and linguloid type A.			
	Fossils collected by Bell from 558 feet, *Angulotreta triangularis* Palmer, linguloid type A, *Aphelaspis* sp., aff. *Listroa longifrons* (Palmer), and *Dunderbergia* sp.			
53.	Limestone--granular, greenish-brown, sandy, very glauconitic, fossiliferous, massive.	2	466	549-551
	Fossils collected by Bell from 550 feet, *Coosia* cf. *C. albertensis* Resser and linguloid fragments.			
54.	Covered.	10	476	539-549
55.	Limestone--granular; medium-gray, grayish-brown, and medium-brown mottled, brown mostly in lower part; silty; in part glauconitic, more glauconitic upward; sand fairly common; some beds oolitic; mudball-like objects may be dolomitic; wavy bedding, beds mostly 1 to 6 inches.	39	515	500-539
	Fossils collected by Bell from 525 feet, *Coosina* cf. *C. ariston* (Walcott).			
56.	Limestone--granular; medium- to dark-brown, in part mottled; silty; glauconitic; a few sand grains throughout, more abundant upward; oolitic in lower part; distinct wavy bedding, beds up to 10 inches.	8	543	472-500

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Bell from 483 feet, Coosella beltensis Lochman, Maryvillia sp., Tricephalus thoosa (Walcott), and linguloid frags.			
57. Covered--some limestone at 431 feet granular, gray, trilobitic.	43	586	429-472
Fossils collected by Bell from 440 feet, Coosia cf. C. connata Walcott, Coosella cf. C. granulosa Rasetti, Tricrepicephalus thoosa (Walcott), Tricrepicephalus texana (Shumard), Kinsabia sp., and linguloid frags; from 440-445 feet, Coosella sp., Kinsabia sp., acrotretoid, and large brassy spicules; from 477 feet, Meteoraspis metra (Walcott) and Tricrepicephalus thoosa (Walcott).			
Leave drain at 472 feet in section, cross east-west fence at 465 feet, and follow down in section southward along east side of fence.			
58. Limestone--granular; dark-brown, some lighter colored streaks along bedding; composed of rounded to elongated and spinose objects having concentric (?) structure, coated by brilliant bronzy films; one bed.	1	587	428-429
59. Limestone--fine- to coarse-grained; alternately brownish-white and dark-brown, tone of rock as a whole brown, some beds mottled in shades of brown; in part slightly sandy, large poikilitic calcite crystals in some beds enclose grains of silt; very thinly bedded ledges 1 to 6 inches; poorly exposed, best outcrops west of fence.	63	650	365-428
60. Limestone--medium-grained, dark-brown, sandy, thinly bedded, sand in part iridescent from coating of iron oxide.	4	654	361-365

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Bell from 360 to 362 feet, Dicellomus sp.			
61. Limestone--fine-grained, dark dull-brown, silty, slightly sandy, slightly glauconitic at top, unfossiliferous, thinly to thickly bedded.	7	661	354-361
62. Mostly covered.	3	664	351-354
Fossils collected by Bell at 352 feet, Dicellomus sp.			
63. Sandstone--medium- to coarse-grained, medium-gray mottled by yellowish-brown, glauconitic, calcareous, beds about 2 inches.	3	667	348-351
Phosphatic brachiopods abundant, white on weathered surfaces.			
64. Sandstone--medium to very coarse grained, some pebbles 0.25 inch; dark-brown; calcareous; very fossiliferous, mostly phosphatic brachiopods; beds 1 to 6 inches.	10	677	338-348
Fossils collected by Bell from 338 to 345 feet, Dicellomus sp.			
The bottom of this interval is the foot of a low scarp contrasting with the flat covered interval beneath. For purposes of mapping, this is the logical place for the member boundary.			
Hickory Sandstone Member: 338 feet thick			
65. Covered.	16	693	322-338
66. Sandstone--medium-grained, dark-red, each grain coated by iron oxide.	3	696	319-322
Phosphatic brachiopods common near top of interval.			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
67.	Covered	5	701	314-319
68.	Sandstone--medium-grained, dark-red, each grain coated by iron oxide.	1	702	313-314
	Fossils collected by Bell from 313 feet, Cedaria eurycheilos Palmer.			
69.	Covered.	77	779	236-313
70.	Sandstone--medium- to coarse-grained, dark-brown to dark reddish-brown, calcareous, sparsely glauconitic, flattened mudball-like pebbles up to 0.5 inch are limonitic, fossiliferous, exposed in drain east of line of section.	3	782	233-236
71.	Covered.	11	793	222-233
	The section enters a drain at 225 feet.			
72.	Sandstone--fine- to medium-grained, dark-brown, calcareous, glauconitic, fossiliferous.	3	796	219-222
73.	Covered.	2	798	217-219
74.	Sandstone--medium-grained, medium-gray to grayish-brown, calcareous, glauconitic.	4	802	213-217
	Fossils collected by Bell from 216 feet Dicellomus sp.			
75.	Covered.	4	806	209-213
76.	Sandstone--fine- to medium-grained, medium-gray to grayish-brown, calcareous, glauconitic, fossiliferous.	3	809	206-209
	Fossils collected by Bell from 208 feet, Dicellomus sp.			
77.	Covered.	5	814	201-206

Description	Thickness in feet: Interval	Cumulative	Feet above base
78. Sandstone--medium-grained, medium-brown, calcareous, glauconitic.	1	815	200-201
79. Covered.	24	839	176-200
Section crosses east-west fence at 190 feet in section.			
80. Sandstone--medium-grained, dark-brown, calcareous, glauconitic, poorly exposed.	1	840	175-176
At 175 feet, section leaves drain; continue southward.			
81. Covered.	13	853	162-175
82. Sandstone--medium-grained, dark-brown, weathers red, calcareous, glauconitic, fossiliferous, poorly exposed.	3	856	159-162
Fossils collected by Bell from 159 to 162 feet, linguloid.			
83. Covered.	11	867	148-159
84. Sandstone--mostly fine- to medium-grained, in part coarse-grained; mostly beige, buff, various shades of reddish- and yellowish-brown; poorly exposed.	33	900	115-148
Fossils collected by Bell from 142 feet, linguloid.			
85. Covered.	5	905	110-115
SHIFT westward 1,200 feet, with a possibility of a plus or minus 10-foot error, along top(?) of massive sandstone bed; continue down in section down slope in a direction S. 10^{0} W.			
86. Sandstone--fine- to coarse-grained, a few pebbles up to 0.5 inch; mostly beige, buff, various shades of reddish- and yellowish-brown, some beds	85	990	25-110

Description	Thickness in feet: Interval	Cumulative	Feet above base
pasty-white probably from clay; quartz dominant, mostly rounded, some grains very rough; a few black opaque grains; beds not well defined, fairly massive, top 20 feet forms large massive blocks; silification along joints produces a raised pattern; joints strike about N. 50° E., N. 20° E., and N. 05° W.			
87. Sandstone--medium- to coarse-grained, some pebbles up to 0.5 inch; reddish- to yellowish-brown; grains angular, very rough, poorly sorted, mostly quartz, some feldspar mostly kaolinized, a few black opaque minerals; entire massive interval beveled with conglomeratic beds and small cross-beds well displayed; some silicification along joints.	25	1,015	0-25

The Hickory Sandstone rests on Precambrian Valley Spring Gneiss which at this point is much weathered and very poorly exposed.

Everett Ranch--Point Peak Stratigraphic Section, Llano County

The Point Peak section is about 3 miles airline and the Everett Ranch section about 4.5 miles airline northeast of Lone Grove along a county road leading to the Everett Ranch headquarters. The Everett Ranch section includes rocks from just above the base of the Tanyard Formation downward to the top of the Point Peak Member. The Point Peak section includes rocks from the top of the Point Peak Member downward to just below the top of the poorly exposed Cap Mountain Limestone Member of the Riley Formation. Fossil lists were updated by Bell during October 1967. A geologic map of the area is shown in Part 1, Pl. 7, fig. 16.

SPECIAL NOTE: Mapping in connection with the Llano sheet of the Texas Geologic Atlas, done since Part 1 of "The Moore Hollow Group of Central Texas" was published, shows that the top 10 feet of the Everett Ranch--Point Peak section is San Saba Member dolomite and not Tanyard dolomite. To save confusion when cross checking from Part 1, the stratigraphic terminology originally used is retained in the section description below.

Thicknesses of units in the Everett Ranch--Point Peak section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Ellenburger Group* (10 feet measured)		
Tanyard Formation* (10 feet measured)		
Threadgill Member* (10 feet measured)		
Dolomitic facies	10+	626-636
Moore Hollow Group (626 feet measured)		
Wilberns Formation (584 feet)		
San Saba Member (193 feet)		
Dolomitic facies	61	565-626
Calcitic facies	132	433-565
Point Peak Member	198	235-433
Morgan Creek Limestone Member	171	64-235
Welge Sandstone Member	22	42-64
Riley Formation (42 feet measured)		
Lion Mountain Sandstone Member	28	14-42
Cap Mountain Limestone Member	14+	0-14

Description of Section

Description	Thickness in feet: Interval	Thickness in feet: Cumulative	Feet above base
Ellenburger Group*: 10 feet described			
Tanyard Formation*: 10 feet described			
Threadgill Member*: 10 feet described			

*See SPECIAL NOTE at top of page.

Description	Thickness in feet: Interval	Cumulative	Feet above base
1. Dolomite--medium- to coarse-grained; white, gray, weathers light gray; sugary texture; medium-bedded, forms rounded ledges.	10	10	626-636
Moore Hollow Group: 626 feet described			
Wilberns Formation: 584 feet thick			
San Saba Member: 193 feet thick			
Dolomitic facies: 61 feet thick			
2. Dolomite--mostly medium-grained, some patches of coarse-grained, upper 16 feet lavender, alternating coarse- and fine-grained; mostly gray, mottled, weathers gray; locally fossiliferous; medium-bedded. Chert very abundant from 589 to 593 feet.	61	71	565-626
Calcitic facies: 132 feet thick			
3. Limestone--fine- to medium-grained; white, pink, gray, weathers gray; fine-grained part has sugary texture; medium-grained part composed of detrital grains and patches of medium-grained dolomite, fossiliferous; slightly glauconitic; thin- to medium-bedded.	10	81	555-565
4. Limestone--medium-grained; gray, weathers light gray; composed of detrital grains; slightly glauconitic; thin- to medium-bedded.	7	88	548-555
5. Limestone--mostly fine-grained; gray, brown, weathers gray and tan; rusty colored, silty, dolomite burrow fillings common; girvanella common, some of which are silicified above 488 feet; mostly thin-bedded except for some thick beds at base; from 507 to 512 feet, coarse-grained, patchy pink and tan, medium-bedded, dolomitic.	115	203	433-548
Point Peak Member: 198 feet thick			
6. Limestone and siltstone--limestone mostly fine-grained, some medium-grained	198	401	235-433

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	gray, tan, weathers gray; some intraformational conglomerate; oolitic from 350 to 361 and 414 to 417 feet; silty; thin- to medium-bedded, poorly exposed. Siltstone greenish-gray, weathers tan; calcareous; bioherms from 284 to 287 feet; silt and siltstone increase in amount upward; thin-bedded, poorly exposed.			
	Plectotrophia Bed at 314 feet.			
	Morgan Creek Limestone Member: 171 feet thick			
7.	Limestone--very fine to medium grained; gray, weathers gray; bioherms common; slightly glauconitic; limonitic; thick beds alternate with thin softer beds.	25	426	210-235
8.	Limestone--medium- to coarse-grained; gray, weathers gray; limonitic; fossiliferous; thick beds alternate with thin softer beds.	36	462	174-210
	Fossils collected by Barnes from 206 feet, *Drumaspis idahoensis* Resser and *Ellipsocephaloides nitela* Resser.			
9.	Limestone--medium-grained, some coarse-grained coquinite lenses near base; white, gray, weathers gray; glauconitic; very fossiliferous; thin- to medium-bedded.	50	512	124-174
	Fossils collected by Barnes from 124± feet, *Angulotreta* aff. *microscopica* (Shumard), *A. triangularis* Palmer, and linguloid.			
	Fossils collected by Bell from 124 feet, *Angulotreta* aff. *microscopica* (Shumard), *A. triangularis* Palmer, linguloid, *Eoorthis remnicha* (Winchell), *Eoorthis indianola* (Walcott), and *Parabolinoides*; from 124.5 feet,			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Angulotreta microscopica (Shumard), Pelagiella sp., and Billingsella coloradoensis (Shumard); from 125 feet, Angulotreta microscopica (Shumard) and Billingsella coloradoensis (Shumard); from 125+ feet, Pseudodicellomus mosaicus (Bell), Angulotreta microscopica (Shumard), and Pelagiella sp.; from 155 feet, Pseudodicellomus mosaicus (Bell).			
10. Limestone--medium-to coarse-grained; gray, weathers gray; slightly glauconitic; siltstone patches from 120 to 121 feet; very fossiliferous; medium-bedded.	34	546	90-124
Fossils collected by Bell from 94 feet, Angulotreta sp. and Linnarssonella girtyi Walcott. Irvingella coquinite from 123 to 124 feet.			
11. Limestone--medium- to coarse-grained; red, weathers red and gray; glauconitic, hematitic, and limonitic; some rounded sand grains; fossiliferous; thin-to medium-bedded, poorly exposed.	14	560	56-90
Fossils collected by Bell from 83 feet, Linnarssonella girtyi Walcott, and linguloid.			
12. Sandstone--medium-to coarse-grained, angular quartz pebbles scarce; white, red, weathers red and gray; very calcareous; glauconitic; locally hematitic and limonitic; grains rounded, poor to fair sorting; medium-bedded.	12	572	64-76

Description	Thickness in feet: Interval	Cumulative	Feet above base
Welge Sandstone Member: 22 feet thick			
13. Sandstone--medium-grained; tan, weathers tan; slightly calcareous; grains rounded, well sorted, have greenish cast; medium-bedded, poorly exposed.	22	594	42-64
Riley Formation: 42 feet described			
Lion Mountain Sandstone Member: 28 feet thick			
14. Limestone and covered--mostly covered, forms topographic bench. Limestone medium-to coarse-grained; green, white, weathers gray; very sandy, sand very coarse in upper 2 feet, grains rounded; very glauconitic; very fossiliferous; trilobite coquinite lenses common; bedding indistinct. Fossils collected by Bell from 22 feet, *Angulotreta triangularis* Palmer.	28	622	14-42
Cap Mountain Limestone Member: 14 feet described			
15. Limestone--medium-grained; red, reddish-tan, gray, weathers gray; glauconitic; limonitic; very slightly sandy; some spherical structures which resemble ooids; fossiliferous; from 4 to 5 feet trilobite coquinite lenses; medium-bedded, poorly exposed. Fossils are *Tricrepicephalus*.	14	636	0-14

Tanyard--Morgan Creek Area, Burnet and San Saba Counties

Tanyard Stratigraphic Sections, Burnet and San Saba Counties

The Tanyard and Jim John Creek (Cedar Hollow) sections described by Barnes (Cloud and Barnes, 1948) include Moore Hollow and Ellenburger strata above the alate Billingsella bed and additional sections measured by Barnes east and west of Lake Buchanan (Colorado River) include strata below the alate Billingsella bed and above the Eoorthis Bed. The rocks below the alate Billingsella bed are sketchily exposed and were measured and described mainly to give points of correlation with the overlapping Morgan Creek section in which exposures are better. Insoluble residue data for a few samples of San Saba rocks follow the description of the Tanyard section. A geologic map of the Tanyard area is shown in Part 1, Pl. 7, fig. 17.

Fossils collected from the Tanyard section by Ellinwood are listed as follows:

Fossils collected from 0 feet, Comanchia amplooculata (Frederickson), Irvingella major Ulrich and Resser, Sulcocephalus candidus (Resser), and trilobite genus and species undet.; from 0.6 feet, Angulotreta sp., linguloid type B, Eoorthis indianola (Walcott), Eoorthis remnicha (Winchell), Irvingella major Ulrich and Resser, and Parabolinoides contractus Frederickson; from 0.8 feet, Angulotreta sp., linguloid type B, Eoorthis indianola (Walcott), Eoorthis remnicha (Winchell), and Parabolinoides contractus Frederickson; from 1 foot, Angulotreta sp., Angulotreta microscopica (Shumard), Angulotreta microscopica (Shumard), digitalis Bell, linguloid type B, Eoorthis indianola (Walcott), Eoorthis remnicha (Winchell), and Parabolinoides contractus Frederickson; from 2 feet, Angulotreta microscopica (Shumard), Ceratreta hebes Bell, linguloid, Pelagiella sp., Billingsella coloradoensis (Shumard), and Parabolinoides contractus Frederickson; from 10 feet, Billingsella coloradoensis (Shumard), Conaspis testudinatus Ellinwood, Orygmaspis llanoensis (Walcott), Taenicephalus shumardi (Hall), and Wilbernia halli Resser, var. A Ellinwood; from 12 feet, Angulotreta cf. A. microscopica (Shumard), Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), Taenicephalus shumardi (Hall), Wilbernia halli Resser, var. A Ellinwood, and linguloid type B; from 14 feet, Angulotreta sp., Pseudodicellomus mosaicus (Bell), Billingsella aff. B. texana Bell, and Taenicephalus shumardi (Hall); from 24 feet, Angulotreta sp., Pelagiella sp., and linguloid type B; from 34 feet, Billingsella texana Bell, Pseudagnostus cf. P. communis (Hall and Whitfield), Taenicephalus shumardi (Hall); from 35 feet, Billingsella texana Bell and Taenicephalus sp.; from 40 feet, Billingsella texana Bell, Pseudagnostus cf. P. communis (Hall and Whitfield), Taenicephalus sp., and Wilbernia expansa Frederickson; from 42 feet, Billingsella sp. and Taenicephalus sp.; from 56 feet, Idahoia lirae (Frederickson) and Saratogia americana (Lochman and Hu); from 163+ feet, Plectotrophia alata (Walcott) and Chariocephalus whitfieldi Hall.

Thicknesses of units in the Tanyard area are as follows:

Stratigraphic unit	Thickness (feet)
Ellenburger Group (538 feet measured)	
Tanyard Formation (538 feet measured)	
Staendebach Member (336 feet measured)	
Calcitic facies	17+
Dolomitic facies	319
Threadgill Member (202 feet)	
Upper dolomitic facies	41
Calcitic facies	138
Lower dolomitic facies	23
Moore Hollow Group (648 feet measured)	
Wilberns Formation (610 feet)	
San Saba Member (324 feet)	
Dolomitic facies	277
Calcitic facies	47
Point Peak Member	136
Morgan Creek Limestone Member	131
Welge Sandstone Member	19
Riley Formation (38 feet measured)	
Lion Mountain Sandstone Member	35
Cap Mountain Limestone Member	3+

Description of Tanyard Stratigraphic Section

The portion of the Tanyard section, beneath the Staendebach Member of the Tanyard Formation, described by Barnes (Cloud and Barnes, 1948) is repeated as follows:

Description	Thickness in feet: Interval	Cumulative	Feet above base
Ellenburger Group			
Tanyard Formation			
Threadgill Member: 202 feet thick			
Upper dolomitic facies: 41 feet thick			
64. Dolomite--coarse grained, medium gray, beds 2 to 12 inches thick.	18	354	481-499
65. Dolomite--medium grained, medium gray, one bed.	1	355	480-481

Description	Thickness in feet Interval	Cumulative	Feet above base
66. Dolomite--coarse grained, light gray, essentially one bed.	4	359	476-480
67. Dolomite--fine grained, mottled purplish gray to brownish gray, one bed.	1	360	475-476
SHIFT westward 100 feet along side of gully and continue section down slope southward to bottom of gully.			
68. Dolomite--coarse grained, light gray, beds 1 to 4 feet thick, weathers with a pitted surface.	17	377	458-475
Calcitic facies: 138 feet thick			
69. Limestone--sublithographic, very light ivory, abundant network and bedding plane, coarse grained dolomite, one or two beds.	8	385	450-458
70. Dolomite--coarse grained, light gray, one bed.	5	390	445-450
71. Limestone--sublithographic, very light ivory, abundant network and bedding plane, coarse grained dolomite, essentially one bed.	8	398	437-445
72. Dolomite--coarse grained, light gray, one bed.	2	400	435-437
Chert in top subchalcedonic, cloudy, light brown, weathering dirty white, occurring as irregular masses along bedding plane.			
73. Limestone--sublithographic, very light ivory, abundant network and bedding plane, coarse grained dolomite, beds about 3 feet thick.	13	413	422-435
74. Dolomite--microgranular, purplish gray to beige, one bed.	2	415	420-422

Description	Thickness in feet: Interval	Cumulative	Feet above base
Laterally to the south this bed changes by degrees to coarse grained dolomite and then to limestone.			
Chert porcelaneous, white, occurring as nodules, rare.			
SHIFT from bottom of gully southward about 150 feet along hillside and continue section southwestward down slope.			
75. Limestone--sublithographic, white to very light ivory, beds about 3 feet thick alternating with zones having beds 1 to 3 inches thick. The thin bedded zones are about 3 feet thick in lower part of interval becoming thicker upward, with top 13 feet having no beds over 1 foot thick and mostly ranging between 1 to 6 inches in thickness. Coarse grained dolomite as a network and along bedding planes common throughout interval.	55	470	365-420
Chert minutely quartzose and smoky gray, sparingly present at a few places in interval. None seen is persistent for an appreciable distance along the strike.			
Fossils as cross sections on bedding surfaces are common. No collections were made but fossils can be broken out of the limestone.			
76. Limestone--sublithographic, white, one bed, contains network of coarse grained dolomite.	6	476	359-365
Chert minutely quartzose, dark smoky gray, occurring as irregular pieces up to 1 by 6 inches in size, rare.			
77. Limestone--sublithographic, white beds 2 to 4 inches thick.	3	479	356-359

Description	Thickness in feet: Interval	Cumulative	Feet above base
78. Limestone--sublithographic, white beds up to 2 feet thick. Beekite excrescenses ¼ inch in size are present but scarce.	4	483	352-356
79. Limestone--sublithographic, white, beds up to 5 feet thick with a zone from 333 to 334 feet composed of 1- to 2-inch beds. Coarse grained dolomite is present as a discontinuous network and in places along bedding. Fossils are rounded-headed trilobites at 335 feet.	32	515	320-352
SHIFT along bedding plane southward for 75 feet and continue down slope to Cambrian boundary. Note laterally gradational boundary between the limestone and dolomite.			
Lower dolomitic facies: 23 feet thick			
80. Dolomite--coarse grained, light gray with red, purple and yellow weathering stains, beds 1 to 4 feet thick, weathers with a pitted surface. Chert quartzose and black, occurs sparingly in bottom foot of interval.	23	538	297-320
SHIFT along Cambrian-Ordovician contact near top of bluff about 700 feet to the southeast and continue section S. 30° W. using a 6° dip in line of section. Actual dip is about 9° to the north.			
Moore Hollow Group: 297 feet measured Wilberns Formation: 297 feet measured San Saba Member: 297 feet thick Dolomitic facies: 277 feet thick			
81. Dolomite--fine to very fine grained, pinkish gray, platy, in beds 2 to 6 inches thick.	10	548	287-297

Description	Thickness in feet: Interval	Cumulative	Feet above base
82. Dolomite--fine to very fine grained, mottled dark gray to light brown and nutria, beds 4 to 12 inches thick. Chert semiporcelaneous, minutely quartzose, dolomoldic to compact, light brown weathering dirty white, abundant as network aggregates.	17	565	270-287
83. Dolomite--fine to very fine grained, light brown to dark gray and nutria, beds 6 to 12 inches thick. Chert very scarce.	9	574	261-270
84. Dolomite--fine to very fine grained, nutria to light brown and dark gray and from 250 to 261 feet mostly beige, beds 6 inches to 4 feet thick. Chert at 216 to 245 feet common and at 245 to 261 feet abundant as quartzose, highly porous, dirty white layers along the bedding. Chert oolitic, semiporcelaneous, light brown and 6 inches thick is present at 227 feet. Conical fossils on bedding surface at 228 feet.	45	619	216-261
85. Chert--semiporcelaneous, white, faintly micro-oolitic, somewhat dolomoldic, occurs as a rather continuous layer.	2	621	214-216
86. Dolomite--fine to very fine grained, light brown to dark gray, somewhat mottled, beds 6 inches to 2 feet thick. Chert quartzose, highly porous, dirty white, very abundant as layers along the bedding.	14	635	200-214

SHIFT along top of coarse grained dolomite along bluff about 500 feet and continue section down spur to the south.

Description	Thickness in feet: Interval	Cumulative	Feet above base
87. Dolomite--coarse grained, light gray, seldom with mottles having a very light purplish tint, beds 1 to 4 feet thick, weathers pitted. Chert at 139 feet to 155 feet common; at 155 to 175 feet scattered and in smaller pieces, chalky textured to semiporcelaneous and minutely quartzose, in part chalcedonic.	75	710	125-200
88. Dolomite--coarse grained, mottled medium to dark gray and beige, beds about 2 feet thick, weathers pitted. Chert chalky textured to semiporcelaneous and minutely quartzose, in part chalcedonic, occurring as irregular finger-like to flattened nodules.	11	721	114-125
89. Dolomite--medium grained, beige with some medium gray mottles. Chert at 111 to 113 feet semiporcelaneous, minutely quartzose, slightly dolomoldic, occurring as irregular ½-inch sized pieces.	3	724	111-114
90. Dolomite--very fine to fine grained, mostly purplish with dark gray and beige mottlings, beds 6 to 12 inches thick, slightly pitted on weathered surfaces.	19	743	92-111

SHIFT across drain and along hillside about 400 feet to the south. This shift is unsatisfactory. The chert does not hold a constant level and nothing could be traced without question. The dip of the rocks in this area averages 10° and this value was used along the flood plain to help establish the tie point. A median point was chosen between the points obtained by lateral tracing and by instrument. The error in this shift is probably within 10 feet.

Description	Thickness in feet: Interval	Cumulative	Feet above base
91. Dolomite--microgranular to fine grained, mottled and streaked mostly light purplish and light olive green to beige, beds irregular and about 1 to 2 feet thick. Chert porcelaneous to semiporcelaneous, in part quartzose, highly dolomoldic, dirty white, and occurring as network excrescences on weathered surface which cannot be seen on freshly broken surfaces. In upper part much of the chert is in curved layers as if deposited with or concentrated along growth surfaces of stromatolites. Fossils are silicified Scaevogyra seen at 78 and 81 feet.	32	775	60-92
92. Dolomite--microgranular to very fine grained, somewhat mottled beige and medium gray with some yellowish and purplish streaks and mottles, beds 1 to 2 feet thick.	15	790	45-60
93. Dolomite--microgranular to very fine grained; mottled medium gray to dark gray, beige and purplish gray; beds 1 to 4 feet thick, weathers pitted. Some calcite is present in the rocks as bodies about as large as the surface pits.	15	805	30-45
94. Dolomite--microgranular to very fine grained, medium to dark gray with some yellow and purple streaks; beds in bottom 7 feet, 6 inches to 2 feet thick; in top 3 feet, 2 to 4 inches thick; weathers blocky and smooth.	10	815	20-30
Calcitic facies: 20 feet measured to bottom of section			
95. Limestone somewhat dolomitic--mottled light to medium to dark gray, sparingly dolomitic at bottom becoming progressively more dolomitic	20	835	0-20

Description	Thickness in feet: Interval	Cumulative	Feet above base
upward until only the girvanellas remain limestone. The dolomitic portion of the rock forms a raised network on weathered surfaces. The bottom 9 feet is essentially one bed as is also the portion of the interval from 11 to 17 feet. From 9 to 11 feet 1- to 2 inch beds and from 17 to 20 feet 4- to 18-inch beds. On gentler slopes the bedding joints are more closely spaced, forming parallel sided slabs.			
This section was measured when the water in Lake Buchanan was low. When the lake is full a portion of the bottom part of the section will be under water. The bottom of the Tanyard section is about 6000 feet south of Tanyard Spring and about 2800 feet downstream from Wolf Spring.			

Description of Insoluble Residues, Tanyard Stratigraphic Section

The residues prepared by Hendricks (1952) contain very little material of silt size and finer. For this reason new residues were prepared from about every sixth sample in order to have a few samples from this section comparable to those examined from other sections. The examination of the new residues yielded much the same information as recorded by Hendricks, except for the present of considerable fine-grained material.

Description	Feet above base
1. Residue very scarce--almost entirely brightly birefringent clay flakes with specks of hematite; one small rhomb of feldspar.	330-335
2. Residue scarce--mostly green to brown, brightly birefringent, interstitial clay in part hematite stained; feldspar rhombs very scarce.	305-310
3. Residue common--mostly microgranular chert, some interstitial faintly birefringent chert, large grains of quartz very scarce.	290-295
4. Residue very abundant--mostly white, granular, dolomoldic, quartzose chert; interstitial, weakly birefringent clay very scarce.	260-265
5. Residue abundant--mostly very light grayish brown, weakly birefringent, interstitial to dolomoldic, "earthy" chert; only a little granular, quartzose chert; weakly birefringent, interstitial to dolomoldic clay very scarce; a few small grains of glauconite or altered hydrobiotite.	230-235
6. Residue common--mostly brown, brightly birefringent, interstitial to dolomoldic clay; a few grains of glauconite(?) and quartz.	190-195
7. Residue scarce--mostly brown, brightly birefringent, interstitial clay in part hematite stained; a few grains of authigenic quartz with clear borders and centers containing numerous inclusions.	160-165

Description	Feet above base
8. Residue very scarce--mostly microgranular chert and silt size authigenic quartz, a few flakes of clay, a couple of small grains of glauconite.	130-135
9. Residue very scarce--mostly interstitial, microgranular chert; a few flakes of clay; a few fine to very fine sand grains; mostly quartz, one of feldspar.	95-100
10. Residue abundant--mostly "earthy," interstitial to dolomoldic chert; feldspar rhombs and glauconite grains very scarce.	60- 65
11. Residue common--mostly light brown, low birefringence clay; a few angular quartz grains; chert very scarce.	40- 45

Description of Jim John Creek (Cedar Hollow) Stratigraphic Section

The Jim John Creek section is in the vicinity of a small tributary of Jim John Creek 3000 feet due west of the mouth of Jim John Creek (Cedar Hollow) and about 1000 feet west of figure 1, plate 7. The top of the section is about 1,500 feet north of Jim John Creek and 400 feet east of the tributary. This section was measured in an attempt to estimate the interval between the base of the Tanyard section and the alate-*Billingsella* bed.

Description of Section

Description	Thickness in feet Interval	Cumulative	Feet above base
Moore Hollow Group: 115 feet measured			
Wilberns Formation: 115 feet measured			
San Saba Member: 100.5 feet measured			
Dolomitic facies: 72 feet measured			
1. Dolomite--very fine grained to microgranular, poorly exposed.	14	14	101-115
Chert of the type described in Tanyard section, interval 91, very abundant.			
Fossils are *Scaevogyra sweezeyi* Whitfield, *S. elevata* Whitfield, *Sinuopea* sp., and *Proplina* or *Archinacella*. Silicified girvanellas are abundant (205T-1-11A).			
2. Dolomite--very fine grained to microgranular, beds range up to 2 feet thick.	42	56	59-101
3. Dolomite--limestone transition, dolomitic.	16	72	43- 59
SHIFT from the upper boundary of an inlier of San Saba limestone downstream and continue section southward. Shifting on the boundary between limestone and dolomite is not satisfactory since this boundary fluctuates. The amount of error in this shift cannot be estimated on the ground but it appears by comparison with another section that about 16 feet of beds was not measured.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Calcitic facies: 28.5 feet thick			
4. Limestone--mottled, medium-gray with yellow and brown wavy streaks, beds 6 to 18 inches thick.	28.5	100.5	14.5-43
Point Peak Member			
5. Shale--with thin beds of fine-grained, medium-gray, dolomitic limestone.	10	110.5	4.5-14.5
6. Limestone--oolitic, brown, glauconitic, one bed.	3	113.5	1.5-4.5
Fossils are alate *Billingsella* on the top surface of bed.			
7. Limestone--oolitic, white, contains pebble-like intraclasts. The next bed beneath contains *Plectotrophia*.	1.5	115	0-1.5

Description of Sections on East and West Banks of Colorado River

The top of the section on the east bank of Colorado River is 4,800 feet northeast of Tanyard Spring on the point of a ridge 400 feet from Colorado River; its base is 300 feet west of its top. The top of the section on the west bank of Colorado River is 1,900 feet northwest of Tanyard Spring, 900 feet from Colorado River, and 200 feet southwest of the point where a pasture road crosses the Point Peak--Morgan Creek boundary; its base, which is at the top of the *Irvingella* zone, is 350 feet southeast of its top. An additional 51 feet of Morgan Creek Limestone and 19 feet of Welge Sandstone were measured southeastward below the *Eoorthis* bed. About 35 feet of poorly exposed Lion Mountain Sandstone and 3 feet of well-exposed Cap Mountain Limestone crop out between the Welge Sandstone and river level.

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 216 feet described			
Wilberns Formation: 216 feet described			
Point Peak Member: 136 feet thick			
1. Limestone--aphanitic stromatolites and granular interreef beds.	7	7	209-216
Plectotrophia abundant from 210 to 211 feet; saukid trilobites in stromatolite heads in top foot.			
2. Covered and limestone--mostly covered, some thin-bedded, granular, silty limestone.	10	17	199-209
3. Limestone--from 190 to 194 feet, oolitic, much intraformational conglomerate; from 190 to 195 feet, massive; from 195 to 197 feet, thin-bedded; from 197 to 199 feet, oolitic, massive.	9	26	190-199
Plectotrophia and some other silicified brachiopods, possibly small *Billingsella*, in massive intervals.			
4. Limestone and shale--limestone mostly intraformational conglomerate; thin, platy, silty beds alternate with shale films; upper foot somewhat more massive, very cherty.	5	31	185-190

Description	Thickness in feet: Interval	Cumulative	Feet above base
Chert yellowish-gray, slightly translucent, spiculiferous, spicules straight.			
Plectotrophia in intraformational conglomerate at 188 feet.			
5. Limestone--aphanitic stromatolites and intraformational conglomerate.	3	34	182-185
Plectotrophia abundant.			
6. Covered--float abundant, plates of silty limestone.	13	47	169-182
7. Covered and limestone--the stromatolitic limestone and intraformational conglomerate in this interval may have slid from interval 5.	4	51	165-169
8. Limestone--granular, grayish-red, oolitic, and intraformational conglomerate.	2	53	163-165
Plectotrophia in intraformational conglomerate.			
9. Covered and limestone--mostly covered; two aphanitic to very fine grained limestone beds in lower 2 feet; siltstone float abundant in lower 50 feet.	83	136	80-163
Morgan Creek Limestone Member: 80 feet described			
10. Limestone--coarse-grained, grayish-red.	3	139	77-80
SHIFT 4,600 feet southwestward across Colorado River to section on west bank of Colorado River; continue down in section southeastward.			
11. Limestone and covered--granular limestone beds alternating with covered intervals; this interval exposed in a vertical bluff below interval 10 is almost entirely limestone.	26	165	51-77

	Description	Thickness in feet: Interval	Cumulative	Feet above base
12.	Covered and limestone--covered except for granular limestone as follows: from 22 to 24 and 25.5 to 26 feet; a 3-inch bed at 27 feet; from 32.5 to 33 feet, mottled; from 33.5 to 34 feet; from 34.5 to 35.5 feet, top half mottled; from 37 to 39 feet, nodular, mottled, alternating coarse- and fine-grained beds; from 40.5 to 41 feet; from 41.5 to 44 feet, dolomite patches and mottles common in top half; and from 45 to 46.5 feet. A change of slope at 41.5 feet indicates that the Morgan Creek above this point is mostly limestone and that the next 35 feet below contains much shale or shaly siltstone.	29	194	22-51
13.	Covered and shale--mostly covered, some shale laterally in drain beneath overlying limestone ledge.	3	197	19-22
14.	Covered and limestone--covered except for granular, mottled limestone from 12 to 12.5, 16 to 16.5, and 18.5 to 19 feet.	7	204	12-19
15.	Covered and limestone--covered except for granular limestone from 0 to 3 feet; from 6 to 7 feet, nodular, top 5 inches one bed; from 10 to 10.5 feet; and laterally a 2-inch bed between 10.5 and 12 feet. In lower interval Eoorthis abundant in lower two feet, phosphatic brachiopods common, small calcareous brachiopods abundant at base; from 6 to 7 feet, Billingsella abundant; from 10 to 10.5 feet, Billingsella and trilobites common; in upper 2-inch bed, trilobites abundant.	12	216	0-12

Goodrich Ranch Composite Stratigraphic Section, Burnet County

The Goodrich Ranch section is a composite section measured and described August 1956 by Gerhard Cyril Julius Jansen (1957) under the direction of Bell. Fossils were collected and identified from the section by Jansen; identifications were checked by Bell. This work was part of the fulfillment for a Master of Arts degree. Fossil lists were updated by Bell during June 1969. A geologic map of the Goodrich Ranch area is shown in Part 1, Pl. 9, fig. 1.

Thicknesses of units in the Goodrich Ranch section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Moore Hollow Group (933 feet measured)		
Wilberns Formation (468 feet measured)		
San Saba Member (167 feet measured)		
Dolomitic facies	125+	808-933
Calcitic facies	42	765-808
Point Peak Member	147	618-765
Morgan Creek Limestone Member	141	477-618
Welge Sandstone Member	12	465-477
Riley Formation (465 feet measured)		
Lion Mountain Sandstone Member	42	423-465
Cap Mountain Limestone Member	179	244-423
Hickory Sandstone Member	244+	0-244

Lacey Creek Segment

The top of the Lacey Creek segment is in the north branch of Lacey Creek about 3,500 feet S. 80° E. of the junction of Lacey Creek and Beaver Creek. The direction of the section is downstream

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 933 feet described			
Wilberns Formation: 468 feet described			
San Saba Member: 168 feet described			
Dolomitic facies: 125 feet described			

Description	Thickness in feet: Interval	Cumulative	Feet above base
86. Dolomite--microgranular to very fine-grained; pale red-purple to pinkish-gray, weathers medium-gray to medium dark-gray; surface pitted, some pits elongated in bedding direction furnish only evidence of bedding.	68	68	865-933
85. Dolomite--microgranular to very fine-grained; pale red-purple, weathers medium-gray to dark-gray; pits on weathered surface in part filled by calcite; beds over 1 foot thick.	57	125	808-865
Chert and quartz druse at 840 feet, forms films in cracks, chert white- to pale-red, purple.			
Calcitic facies: 42 feet thick			
84. Limestone--fine-grained; yellowish-gray, weathers pale-brown; beds less than 6 inches, separated by pale olive-brown shale films.	4	129	804-808
Fossils collected from 806.5 feet, *Multivasculatus ovatus* Howell and van Houten.			
83. Dolomite--fine-grained; pale-red to purple, weathers moderate red-orange; blocky outcrop.	3	132	801-804
82. Limestone--fine-grained; yellowish-gray, weathers medium-gray; beds wavy, irregular, less than 6 inches.	11	143	790-801
81. Limestone--fine-grained; yellowish-gray, weathers medium-gray to pale-brown; beds 2 inches to 2 feet, well-exposed.	14	157	776-790
80. Limestone--fine-grained; yellowish-gray with moderate-red streaks, weathers brownish-gray, mottled; a small stromatolitic bioherm in creek bed.	1	158	775-776

Description	Thickness in feet: Interval	Cumulative	Feet above base
79. Limestone--fine-grained; yellowish-gray, weathers brownish-gray, mottled; some beds very silty; pits on surface may be result of girvanella weathering, girvanella common in lower bed; beds irregular, wavy, average 2 inches, separated by pale olive-brown shale films.	10	168	765-775

SHIFT 10,500 feet N. 40° W. to top of Point Peak Member along Farm Road 1478 where it leaves Gray Mountain; continue down in section southward along road.

County Road Segment

Point Peak Member: 147 feet thick

78. Limestone--medium dark-gray, weathers medium-dark gray; oolitic, ooids calcitic and dolomitic; some glauconite.	1	169	764-765
77. Limestone, siltstone, and covered--limestone fine-grained, silty; from 743.5 to 748 feet, siliceous and oolitic, beds up to 8 inches interbedded with siltstone; both medium light-gray, weather light olive-gray. Fossils collected from 743.5 feet, *Idiomesus infimus* Longacre, *Ptychaspis* sp., *Briscoia*? sp., *Prosaukia*? sp., unknown trilobites, hexactinellid spicules, *Finkelnburgia*? sp., and gastropods; from 744 feet, *Idiomesus infimus* Longacre, *Briscoia*? sp., *Ptychaspis* sp., unknown trilobites, and gastropods.	23	192	741-764
76. Limestone and siltstone--limestone silty, beds less than 8 inches, interbedded with siltstone; medium-gray, weathers medium dark-gray; from 740 to 741 feet, intraformational conglomerate.	27	219	714-741

	Description	Thickness in feet: Interval	Cumulative	Feet above base
75.	Limestone and siltstone--limestone fine-grained, silty, beds less than 4 inches, interbedded with shaly siltstone; both pale olive-gray; at 713 feet, an 8-inch intraformational conglomerate, mottled brown.	7	226	707-714
74.	Siltstone and limestone--siltstone, pale olive-brown; interbedded with limestone, aphanitic, silty, and intraformational conglomerate, brownish-green; at 707 feet, gray stromatolites.	3	229	704-707
73.	Siltstone and limestone--siltstone and silty, aphanitic limestone; light olive-gray; beds less than 2 inches.	11	240	693-704
72.	Siltstone and limestone--siltstone and interbedded limestone; in part greenish-gray, some medium dark-gray stromatolites, and brown and gray mottled intraformational conglomerate; beds less than 4 inches. From 677 to 687 feet, siltstone and limestone; from 687 to 688 feet, intraformational conglomerate; from 688 to 690 feet, siltstone and limestone, in part stromatolitic; from 690 to 693 feet, siltstone and limestone, capped by 6 inches of intraformational conglomerate.	16	256	677-693
71.	Siltstone, limestone, and covered--mostly covered, poorly exposed. At 621 feet, limestone, aphanitic, gray; from 651.5 to 652 feet, interbedded, limestone and siltstone; from 664 to 664.5 feet, limestone beds up to 0.5-inch interbedded with siltstone; stromatolite float above 621 feet, common above 670 feet. Fossils collected from 670 feet, aglaspid? or brachiopod fragment.	59	315	618-677

Description	Thickness in feet: Interval	Cumulative	Feet above base
SHIFT 6,000 feet N. 80° W. to top of southward-trending spur on south side of Gray Mountain; continue down in section down slope.			
Gray Mountain Segment			
Morgan Creek Limestone Member: 141 feet thick			
70. Limestone--medium-grained, grayish-red, slightly glauconitic, 8-inch beds.	2	317	616-618
Fossils collected from 618 feet, Angulotreta microscopica (Shumard).			
69. Limestone--coarse-grained; medium light-gray, weathers medium dark-gray; glauconitic; slightly sandy; beds up to 18 inches.	6	323	619-616
Fossils collected by Jansen from 610 feet, Angulotreta microscopica (Shumard); from 615 feet, Angulotreta sp., Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis idahoensis Resser, and Saratogia modesta (Lochman and Hu); from 616 feet, Angulotreta microscopica (Shumard).			
68. Limestone--coarse-grained; dark greenish-gray, weathers medium-gray; glauconitic; biostromes at 601 feet; beds up to 12 inches.	10	333	600-610
Fossils collected from 604 feet, Angulotreta microscopica (Shumard), linguloid type B, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, Ptychaspis bullasa Lochman and Hu, Saratogia fria Lochman and Hu, pelmatozoan calyx?, and Sinuella minuta Knight; from 606 feet, Angulotreta sp.,			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	linguloid, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, Saratogia modesta (Lochman and Hu), and trilobite gen. and sp. undet.			
67.	Limestone--coarse-grained, weathers dark greenish-gray, glauconitic, pale-brown dolomite scarce, oolitic.	2	335	598-600
66.	Limestone--coarse-grained; dark greenish-gray, weathers brown and dark greenish-gray mottled with hackly surfaces, glauconitic.	3	338	595-598
65.	Limestone--coarse-grained; dark greenish-gray, weathers dark greenish-gray; glauconitic; sand scarce; beds up to 12 inches.	11	349	584-595
	Fossils collected from 590 feet, Angulotreta microscopica (Shumard), linguloid type B, Idahoia lirae (Frederickson), Idahoia lirae (Frederickson) var. A Bell, in Bell and Ellinwood, and Wilbernia diademata (Hall); from 591 feet, Idahoia lirae (Frederickson), Idahoia lirae (Frederickson), var. A. Bell in Bell and Ellinwood, Wilbernia expansa Frederickson, and large spined ornamental pygidium; from 594 feet, Angulotreta sp., linguloid type B, Pseudodicellomus mosaicus (Bell), Sinuella minuta Knight, Pseudagnostus cf. P. communis (Hall and Whitfield), Idahoia lirae (Frederickson), Idahoia lirae (Frederickson), var. A Bell in Bell and Ellinwood.			
64.	Limestone--coarse-grained; dark greenish-gray, weathers gray with brown stains; glauconitic; beds up to 10 inches.	4.5	353.5	579.5-584

	Description	Thickness in feet: Interval	Cumulative	Feet above base
63.	Limestone--in ascending order: 6 inches, medium- to fine-grained, mottled brown surface; 8 inches, dusky-red, slightly dolomitic, non-glauconitic; 4 inches, coarse-grained, gray. Fossils collected from 579 feet, Billingsella texana Bell and Pseudagnostus cf. P. communis (Hall and Whitfield).	1.5	355	578-579.5
62.	Limestone--coarse-grained, at 373 feet a 3-inch bed, medium-grained; dark greenish-gray, weathers dark greenish-gray; sandy; glauconitic; slightly dolomitic; beds up to 8 inches. Fossils collected from 572 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella texana Bell, Pseudagnostus cf. P. communis (Hall and Whitfield), Taenicephalus shumardi (Hall), Taenicephalus sp., and Taenicephalus n. sp.; from 573 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella texana Bell, Taenicephalus shumardi (Hall), and Pelagiella sp.; from 575 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), linguloid type B, Billingsella texana Bell, Pseudagnostus cf. P. communis (Hall and Whitfield), Taenicephalus shumardi (Hall), Taenicephalus sp., and Taenicephalus n. sp.	6	361	572-578
61.	Limestone and covered--mostly covered. Limestone at 564 feet, fine-grained, medium-gray, glauconitic, slightly dolomitic; at 566 feet, coarse-grained, gray, glauconitic, 8 inches; at 568 feet, coarse-grained, medium-gray, glauconitic, slightly sandy, 4 inches.	8	369	564-572

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Fossils collected from 568 feet, Taenicephalus shumardi (Hall).			
60.	Limestone and covered--mostly covered, interval may be mostly shale. Limestone represented by float, thin plates.	19	388	545-564
	Fossils collected from 545 feet, Angulotreta microscopica (Shumard), var. digitalis Bell, micromitrid, pseudodicellomid, Homagnostus tumidosus (Hall and Whitfield), Comanchia amplooculata (Frederickson), Dellea? cf. punctata Palmer, Irvingella major Ulrich and Resser, and aff. Morosa n. sp.; from 546 feet, Angulotreta microscopica (Shumard), Angulotreta microscopica (Shumard) digitalis Bell, linguloid type B, Billingsella coloradoensis (Shumard), Eoorthis remnicha (Winchell), Parabolinoides contractus Frederickson, and Parabolinoides granulosus Ellinwood; from 547 feet, Angulotreta microscopica (Shumard), Pelagiella sp., Schizopea sp., Billingsella coloradoensis (Shumard), Parabolinoides contractus Frederickson, and Pelagiella sp.; from 551 feet, Billingsella aff. B. texana Bell, Orygmaspis llanoensis (Walcott), and Taenicephalus gouldi (Frederickson); from 555 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella texana Bell, Conaspis testudinatus Ellinwood, Orygmaspis llanoensis (Walcott), and Taenicephalus aff. T. gouldi (Frederickson); from 559 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Pelagiella sp., Billingsella texana Bell, Orygmaspis llanoensis (Walcott), and Taenicephalus shumardi (Hall).			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
59.	Limestone--coarse-grained, medium-gray, glauconitic, dolomite scarce. Fossils collected from 540.5 feet, Linnarssonnella girtyi Walcott; from 542 feet, Linnarssonella girtyi Walcott, ocnerorthid brachiopod, Camaraspis convexa (Whitfield), aff. Dellea saratogensis (Resser), Dellea suada (Walcott), Elvinia roemeri (Shumard), Morosa(?) bothra Stitt, and Morosa simplexa Stitt.	5	393	540-545
58.	Limestone--coarse-grained; light medium-gray, weathers mottled brown and tan; glauconitic; slightly dolomitic; bedding indistinct, some beds as thin as 1 inch. Fossils collected from 535 feet, Linnarssonella girtyi Walcott, acrotretoid, paterinid, linguloid type A, ocnerorthid brachiopod, Dellea saratogensis (Resser), Dellea suada (Walcott), Elvinia roemeri (Shumard), and Pterocephalia sanctisabae Roemer.	5	398	535-540
57.	Limestone and covered--mostly covered. Limestone at 526 feet, coarse-grained, medium-gray, glauconitic, oolitic. Fossils collected from 525 feet, Linnarssonella girtyi Walcott, linguloid type B, paterinid, Camaraspis convexa (Whitfield), Cliffia latagenae (Wilson), Dellea suada (Walcott), Dokimocephalus intermedius (Resser), and Elvinia roemeri (Shumard).	10.5	408.5	524.5-535
56.	Limestone--medium-grained, weathers gray, interbedded with shale.	0.5	409	524-524.5
55.	Limestone--coarse-grained; medium-gray, weathers light-gray; glauconitic; sandy and shaly zones common; oolitic from 500 to 500.5 and at 507 feet; beds 2 to 12 inches.	24	433	500-524

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Fossils collected from 501 feet, Linnarssonella girtyi Walcott, and linguloid type B; from 507 feet, Linnarssonella girtyi Walcott; from 510.5 feet, Linnarssonella girtyi Walcott, linguloid type B, Elvinia roemeri (Shumard), Irvingella major Ulrich and Resser, Kindbladia affinis (Walcott), and Xenocheilos minutum Wilson; from 515 feet, Linnarssonella girtyi Walcott; from 515.6 feet, Linnarssonella girtyi Walcott, Deadwoodia duris (Walcott), Elvinia roemeri (Shumard), Iddingsia robusta (Walcott), Irvingella major Ulrich and Resser, and Kindbladia affinis (Walcott); from 516 feet, Linnarssonella girtyi Walcott, Homagnostus tumidosus (Hall and Whitfield), ?Homagnostus sp., Pseudagnostus cf. P. communis (Hall and Whitfield), Aphelotoxon sp., Deadwoodia duris (Walcott), Elvinia roemeri (Shumard), Iddingsia robusta (Walcott), Irvingella major Ulrich and Resser, Kindbladia affinis (Walcott), and Pterocephalia sanctisabae Roemer.			
54.	Limestone--coarse-grained; dusky-red to grayish-red, weathers mottled gray-brown; slightly sandy; beds 3 to 30 inches.	17.5	450.5	482.5-500
	Fossils collected from 491 feet, Linnarssonella girtyi Walcott; from 496 feet, Linnarssonella girtyi Walcott, Pseudagnostus cf. P. communis (Hall and Whitfield), Kindbladia wichitaensis (Resser), and Plataspella anatina (Resser).			
53.	Limestone--coarse-grained, dark reddish-brown, weathers dark-red; very sandy at base to slightly sandy at top; slightly glauconitic; beds more than 12 inches.	5.5	456	477-482.5

Description	Thickness in feet: Interval	Cumulative	Feet above base
Welge Sandstone Member: 12 feet thick			
52. Sandstone--coarse- to medium-grained; yellowish-brown, weathers moderate brown; slightly glauconitic; calcareous; grains subrounded; bedding indistinct, forms scarp.	12	468	465-477
Fossils collected from 468 feet, Cheilocephalus aff. C. brachyops Palmer, Dytremacephalus n. sp. 2, Elvinia roemeri (Shumard), Plataspella anatina (Resser), Pseudosaratogia aff. P. magna Wilson, Pterocephalia sanctisabae Roemer, and Iddingsia n. sp.			
SHIFT approximately 6,000 feet S. 80° E. to a small creek east of Farm Road 1478; continue down in section downstream.			
Bartlett Branch Segment			
Riley Formation: 465 feet described			
Lion Mountain Sandstone Member: 42 feet thick			
51. Sandstone and greensand--coarse-grained; dusky yellowish-green, weathers dusky yellowish-green; cross-bedded.	12	480	453-465
Fossils collected from 453± feet, Dytremacephalus granulosus Palmer.			
50. Sandstone and limestone--sandstone medium- to fine-grained, dark greenish-gray, about 40 percent glauconite, in part calcitic, sand well-rounded. Limestone common as trilobite coquinite and thin beds.	19	499	434-453
Fossils collected from 446 feet, Angulotreta triangularis Palmer, linguloids types A and B, paterinid?, Pseudagnostus cf. P. communis (Hall and Whitfield), and Aphelaspis sp.; from 452 feet, linguloids types A and B, paterinid?, and Aphelaspis sp.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
49. Sandstone--medium-grained; dark greenish-gray, weathers deep-green and dusky-red; very glauconitic, some greensand; in part calcitic; cross-bedded. Fossils collected from 431 feet, linguloid.	3	502	431-434
48. Greensand and limestone--greensand medium- to fine-grained, weathers deep-green and mottled brown, sand well-rounded, cross-bedded; limestone mostly trilobite coquinite. Fossils collected from 429 feet, Angulotreta sp. and linguloid type A; from 430 feet, linguloids types A and B, paterinid?, Aphelaspis constricta Palmer, Cheilocephalus breviloba (Walcott), Dunderbergia aff. D. brevispina Palmer, and Listroa longifrons (Palmer).	3.5	505.5	427.5-431
47. Sandstone, limestone, and covered--mostly sandstone medium-grained, weathers deep-green and dusky-red, glauconitic; some limestone, brownish, glauconitic, mostly trilobite coquinite.	4.5	510	423-427.5
SHIFT about 18,000 feet S.30°E. to Hill Creek about 1,000 feet above where it crosses Farm Road 1478; continue down in section downstream.			
Hill Creek Segment			
Cap Mountain Limestone Member: 179 feet thick			
46. Limestone--coarse-grained; dark greenish-gray, weathers dark greenish-gray; sandy and silty; glauconitic; beds average 8 inches. Fossils collected from 411.5 feet, Dictyonina perforata Palmer and acrotretoid; from 412 feet, Angulotreta sp., Dictyonina perforata Palmer,	13	523	410-423

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	linguloid type A, and Aphelaspis sp.; from 416 feet, Dictyonina perforata Palmer and acrotretoid; from 417 feet, Angulotreta triangularis Palmer, Angulotreta triangularis digitalis Palmer, Dictyonina perforata Palmer, paterinid, Aphelaspis sp., and aphelaspid aff. Taenora? platifrons (Palmer); from 420 feet, Angulotreta triangularis digitalis Palmer, paterinid, Aphelaspis sp., aphelaspid aff., Taenora? platifrons (Palmer), and Listroa longifrons (Palmer); from 423 feet, Angulotreta triangularis Palmer.			
45.	Covered--fossils were obtained away from line of section from beds similar to those in above interval. Fossils collected from 403 feet, Dicellomus? sp., and linguloid type B; from 403.5 feet, cf. Blountia sp., Coosina cf. C. ariston (Walcott), Kingstonia (Ucebia) pontotocensis (Lochman), and Tricrepicephalus thoosa (Walcott); from 406 feet, Angulotreta sp., Dictyonina perforata Palmer, linguloids types A and B, Aphelaspis sp., and Cheilocephalus minutus Palmer; from 408 feet, Angulotreta sp., Dictyonina perforata Palmer, Pseudagnostus cf. P. communis (Hall and Whitfield), and Aphelaspis sp.	7	530	403-410
44.	Limestone--coarse- and medium-grained, weathers dark greenish-gray, glauconitic, interstitial silt scarce, oolitic at 390 and 403 feet; a half-inch bed of glauconitic sandstone at 397.5 feet, beds average 8 inches. Fossils collected from 368 feet, Crepicephalus australis Palmer, Coosina cf. C. ariston (Walcott), Tricrepicephalus thoosa (Walcott), and undet. cranidium; from 369 feet,	36	566	367-403

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Coosina cf. C. ariston (Walcott), and Tricrepicephalus thoosa (Walcott); from 371 feet, Coosia cf. C. albertensis Resser, Coosina cf. C. ariston (Walcott), and Crepicephalus australis Palmer; from 376 feet, Coosina cf. C. ariston (Walcott), Meteoraspis cf. M. loisi Lochman, and Tricrepicephalus thoosa (Walcott); from 386 feet, Kingstonia (Ucebia) pontotocensis (Lochman), Tricrepicephalus thoosa (Walcott); from 396 feet, Coosella aff. C. granulosa Rasetti, Coosella sp., Coosia cf. C. albertensis Resser, Coosina cf. C. ariston (Walcott), Crepicephalus cf. C. lowensis (Owen), Tricrepicephalus thoosa (Walcott), and linguloid fragments; from 398 feet, Coosina cf. C. ariston (Walcott), Crepicephalus cf. C. lowensis (Owen), Kingstonia (Ucebia) pontotocensis (Lochman), Llanoaspis sp., and Tricrepicephalus thoosa (Walcott).			
43.	Limestone--brownish-gray, weathers moderate-gray to moderate brown; glauconitic; silty; slightly dolomitic; beds 4 to 12 inches. Fossils collected from 359 feet, Kormagnostus simplex Resser.	9	575	358-367
42.	Limestone--brownish-gray, weathers gray with pale-brown to dark-brown mottles; silty.	1	576	357-358
41.	Limestone--fine-grained; grayish-brown, weathers light olive-gray; slightly oolitic.	1	577	356-357
40.	Limestone--alternating fine-grained, silty, recessive zones up to 6 inches and coarse-grained, slightly glauconitic, 6- to 14-inch beds; both weather light olive-gray. Fossils collected from 355 feet, Arcuolimbus convexus Palmer, Coosella sp., Kingstonia (Ucebia) pontotocensis (Lochman), cf. Meteoraspis metra (Walcott), and Tricrepicephalus thoosa (Walcott).	6	583	350-356

	Description	Thickness in feet: Interval	Cumulative	Feet above base
39.	Limestone--fine-grained; dark yellowish-gray, weathers light olive-gray; silty; coarsely laminated; beds average 6 inches.	5	588	345-350
38.	Limestone--mostly alternating beds of finely laminated, silty limestone and silt-free, fine-grained limestone; weathers light olive-gray; beds average 6 inches; at 339 feet, coarse-grained, a 6-inch bed. Fossils collected from 339 feet, Kormagnostus simplex Resser, Coosia cf. C. connata (Walcott), Coosella cf. C. ariston (Walcott), Meteoraspis metra (Walcott), Tricrepicephalus thoosa (Walcott), and trilobite gen. and sp. undet.	8.5	596.5	336.5-345
37.	Limestone--fine-grained, some coarse-grained lenses mostly trilobite coquinite; weathers light olive-gray; a few sandy nodules in fine-grained part. Fossils collected from 335 feet, Kinsabia variegata Lochman.	2	598.5	334.5-366.5
36.	Covered.	3.5	602	331-334.5
35.	Limestone--coarse- to medium-grained, gray, 6-inch beds. Fossils collected from 329 feet, Opisthotreta depressa Palmer, paterinid, Kinsabia variegata Lochman, spicule type B, Kormagnostus simplex Resser, Coosia connata (Walcott), Coosia cf. C. connata (Walcott), Meteoraspis aff. M. metra (Walcott), Tricrepicephalus thoosa (Walcott), Tricrepicephalus texanus (Shumard), Tricrepicephalus sp., undet. cranidia; from 331 feet, Opisthotreta depressa Palmer, Kinsabia variegata Lochman, Kormagnostus simplex Resser, Coosia	2	604	329-331

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	connata (Walcott), Coosina sp., Tricrepicephalus texanus (Shumard), and Tricrepicephalus sp.			
34.	Limestone--fine-grained; medium-gray, weathers medium-gray with slightly pitted surface.	2.5	606.5	326.5-329
33.	Limestone--fine-grained; light olive-gray, weathers olive-gray; sandy; grains fine, well-rounded; beds average 6 inches.	6.5	613	320-326.5
32.	Limestone--fine-grained; dusky yellowish-brown to medium-gray, weathers dark yellowish-brown; in part sandy, grains fine, well-rounded, sandy beds laminated and cross-bedded; bedding indistinct, massive appearing.	45	658	275-320
	Fossils collected from 296.5 feet, Meteoraspis cf. M. robusta Lochman, and Tricrepicephalus sp.			
31.	Limestone--fine-grained; moderate yellowish-brown to dusky yellowish-brown, weathers dark yellowish-brown; sandy, some grains coarse; bedding indistinct, beds up to 3 feet, very resistant, form sharp ledges.	15	673	260-275
30.	Covered.	10	683	250-260
29.	Limestone--basal 1-foot bed coarse-grained, granules up to one-quarter inch, dusky-brown, resistant; from 245 to 248 feet, argillaceous, shaly bedded, recessive; above 248 feet, a sequence of sandy, argillaceous, recessive beds, less sandy and argillaceous upward.	6	689	244-250
	Hickory Sandstone Member: 244 feet described			
28.	Sandstone--medium-grained, some coarse grains on bedding surfaces, a few	5	694	239-244

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	quartz pebbles; weathers dark yellowish-brown; slightly calcareous; some thinly bedded recessive zones of fine-grained shaly material; beds average 4 inches.			
27.	Sandstone and siltstone--sandstone medium- to coarse-grained; dusky-brown from hematite stain and cement, calcareous, bedding indistinct, beds up to 24 inches; some siltstone with clay partings, thin-bedded, recessive, beds up to 8 inches. Fossils collected from 230 feet, Cedaria eurycheilos Palmer.	15	709	224-239
26.	Sandstone--coarse-grained, hematitic, grains well-rounded, one bed.	1	710	223-224
25.	Covered--probably coarse-grained, hematitic sandstone and interbedded, silty, recessive beds.	15	725	208-223
24.	Sandstone--coarse-grained, dark yellowish-brown, hematite-stained, calcareous, grains well-rounded, bedding mostly indistinct but beds probably average about 3 inches, in part poorly exposed. Fossils collected from 207 feet, Dicellomus sp. and Cedaria eurycheilos Palmer.	11	736	197-208
23.	Sandstone--medium-grained, dark yellowish-brown, very slightly glauconitic, a few siltstone beds, grains well-rounded, beds average 1.5 inches, weather evenly.	3.5	739.5	193.5-197
22.	Sandstone--medium- to coarse-grained, dusky-brown, hematite stained and cemented, grains well-rounded, beds 4 to 12 inches.	2	741.5	191.5-193.5

	Description	Thickenss in feet Interval	Cumulative	Feet above base
21.	Sandstone--medium-grained, dark yellowish-brown, slightly glauconitic, calcareous, a few recessive siltstone beds, beds less than 3 inches.	5.5	747	186-191.5
20.	Sandstone--in part medium-grained, laminated beds, well indurated, up to 3 inches; interbedded with coarse-grained, recessive, beds up to 8 inches; both dark yellowish-brown.	3	750	183-186
19.	Covered.	18	768	165-183
18.	Sandstone--medium-grained; moderate yellowish-brown, weathers dusky-brown; sparsely glauconitic; increasingly calcitic upward; beds not over 8 inches.	15	783	150-165
17.	Sandstone--medium- to coarse-grained, dark yellowish-brown, sparsely glauconitic, grains well-rounded, a few recessive siltstone beds, beds less than 4 inches. Fossils collected from 147.5 feet, Dicellomus sp. and Bolaspidella prooculis Palmer.	8	791	142-150
16.	Sandstone and covered--mostly covered; sandstone at 133 feet, medium-grained, dark yellowish-brown, grains well-rounded, a few angular pebbles.	26	817	116-142
15.	Sandstone--medium-grained; dark yellowish-brown, weathers moderate yellowish-brown to dusky yellowish-brown; slightly calcareous and glauconitic; a few recessive intervals of shaly siltstone; beds less than 4 inches.	5	822	111-116
14.	Covered.	19	841	92-111
13.	Sandstone--medium- to coarse-grained, dark yellowish-brown, grains well-rounded, a few shaly siltstone beds;	7	848	85-92

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	coarse-grained beds cross-bedded, beds up to 8 inches.			
12.	Sandstone--medium-grained, yellowish-brown, grains well-rounded; a few siltstone beds, hematite-stained, moderate yellowish-brown; beds up to 4 inches.	6	854	79-85
11.	Sandstone--medium-grained; dark yellowish-brown, an 8-inch bed at 70 feet, dusky reddish-brown; grains well-rounded; a few siltstone beds.	9	863	70-79
10.	Covered.	2	865	68-70
9.	Sandstone--medium-grained, moderate yellowish-brown, slightly hematitic, grains rounded, upper foot one bed, rest thin-bedded.	2	867	66-68
8.	Sandstone--medium-grained; moderate yellowish-brown, weathers gray and dusky-brown, mottled; grains rounded; possibly slumped.	1	868	65-66
7.	Covered.	17	885	48-65
6.	Sandstone--medium- to coarse-grained, moderate yellowish-brown, grains subrounded, a few quartz pebbles, cross-bedded, beds 6 to 36 inches, weathers hummocky and spiny.	16	901	32-48
5.	Sandstone--coarse-grained, moderate yellowish-brown, grains subrounded, white quartzite seams weather in relief.	5	906	27-32
4.	Covered.	4	910	23-27
3.	Sandstone--coarse-grained, moderate yellowish-brown, grains subrounded, poorly indurated, light-brown quartzite seams weather in relief.	1	911	22-23
2.	Covered.	7	918	15-22

	Description	Thickness in feet: Interval	Cumulative	Feet above base
1.	Sandstone--coarse-grained; light-brown, a 6-inch bed at 15 feet, very light gray, well indurated; grains rounded; angular quartz and microcline in excess of 2 mm, common; some surface induration, quartzite seams weather in relief; cross-bedded, beds 2 to 3 feet.	15	933	0-15

Morgan Creek Stratigraphic Section, Burnet County

The Morgan Creek section, Burnet County, is composite and consists of several segments scattered through a distance of about 5 miles. The top of the section is 10 miles airline northwest of Burnet and 400 feet northwest of North Morgan Creek at a point 1.6 miles airline northeast of the point where the creek is crossed by the county road. Four important segments of the section, including much of the Wilberns Formation, are situated along North Morgan Creek. Two other segments are along South Morgan Creek, now occupied in part by Lake Buchanan, and much of the Riley Formation is described in a segment situated on Potato Hill (Potatotop) and to the south.

The bottom of the section is about 5 miles airline northwest of Burnet along one of the headwater branches of Clear Creek, 3,200 feet south of the top of Potato Hill, and about 6,200 feet east-northeast of the point where the road to the Southwestern Graphite Company property crosses Clear Creek.

During 1948, Palmer measured the Riley portion of the section on Potato Hill and South Morgan Creek and collected fossils. During 1949, Barnes and Walker added the rest of the Riley south of Potato Hill and the Welge on South Morgan Creek to the section; while Barnes described the section, Walker chip-sampled it in 5-foot intervals. During 1950, Barnes and Ellinwood added 470 feet of Wilberns to the section, mapped the area included in Part 1, Pl. 9, fig. 2, and while Barnes described this part of the section, Ellinwood chip-sampled it and made fossil collections. Fossil lists were updated by Bell during June and July 1969.

Thicknesses of units in the Morgan Creek section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Moore Hollow Group (1,078 feet measured)		
Wilberns Formation (487 feet measured)		
San Saba Member (228 feet measured)		
Dolomitic facies	169+	909-1,078
Calcitic facies	59	850-909
Point Peak Member	114	736-850
Morgan Creek Limestone Member	130	606-736
Welge Sandstone Member	15	591-606
Riley Formation (591 feet)		
Lion Mountain Sandstone Member	47	544-591
Cap Mountain Limestone Member	204	340-544
Hickory Sandstone Member	340	0-340

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 1,078 feet described			
Wilberns Formation: 487 feet described			
San Saba Member: 228 feet described			
Dolomitic facies: 169 feet described			
1. Dolomite and covered--dolomite fine to very fine grained; pinkish-gray to yellowish-gray; residue mostly cryptocrystalline chert and quartz, a few tiny authigenic feldspar rhombs in chert.	55	55	1,023-1,078
Quartz druse abundant, in part interlayered with chert, translucent, in part dolomitic to interstitial, mostly in curved, filmy layers outlining growth surfaces of stromatolites having diameters of 1 to 3 inches, in part replaces septae between stromatolites producing vertical, pipe-like structures exceeding a foot in length.			
Scaevogyra, *Hypseloconus*, and trilobites from about 1,065 to 1,075 feet.			
Fossils collected by Ellinwood from 1,065 feet, *Plethometopus* sp., *Plethopeltis* sp., *Rasettia magna* Ellinwood, *Stenopilus pronus* Raymond, *Theodenisia* sp., *Matthevia* sp., and *Scaevogyra swezeyi* Whitfield.			
2. Dolomite--mostly fine-grained, some medium-grained from 978 to 983, 988 to 993, and 1,008 to 1,013 feet; mostly pale yellowish-brown, pale-red, very light pink, residue mostly scarce, in upper part clay with many tiny authigenic feldspar rhombs mostly with cloudy centers, in lower part mostly tiny quartz crystals, feldspar very scarce, chert mostly intraclastmoldic; elongate pits on weathered surfaces indicate bedding direction; exposed in cliff except for top few feet.	70	125	953-1,023

Description	Thickness in feet: Interval	Cumulative	Feet above base
Chert from 963 to 991 feet very quartzose, interstitial to dolomitic, thin bedding plane streaks; from 971 to 972 feet, and to a lesser extent elsewhere, opaque, somewhat quartzose, intraclastic.			
3. Dolomite--mostly fine-grained, some medium-grained; pale red-purple, pale yellowish-green, bottom bed grayish-orange; residue rather abundant, mostly authigenic quartz, some clay in lower part; bedding indicated by poorly defined elongate weathering pits.	27	152	926-953
Girvanella at 932 feet replaced by granular quartz; a few quartzose chert films.			
4. Dolomite--fine-grained, pale red-purple speckled by pale reddish-brown, stromatolitic, mostly massive.	3	155	923-926
Chert yellowish-gray, translucent to opaque, slightly dolomitic, in part in lacy curving films as if conforming to stromatolites, in part massive; some quartz druse; a few silicified, irregular branching tubes.			
SHIFT about 200 feet downstream to opposite bank of North Morgan Creek using base of stromatolitic zone for making shift; continue down in section.			
5a. Dolomite--medium-grained, pale yellowish-brown flecked by purplish pale-brown; some interstitial glauconite; spherical stromatolites at 914 feet; beds in creek bottom indistinct, on hillside 6 to 12 inches.	14	169	909-923
Basal bed downstream at point of ridge contains upward-branching silicified fossils that lower in section are calcite and associated with stromatolites.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
SHIFT about 3,900 feet airline southwestward to point 1,700 feet up Rock Hollow (northwest) from its mouth and continue down in section down bluff; shift made using recognizable beds in calcitic facies of San Saba Member. Eleven feet of section repeated after shift.			
5b. Dolomite--medium-grained; between yellowish-gray and light olive-gray; bottom bed 6 inches, next bed 3.5 feet followed by a 1.5-foot medium-bedded zone, topped by a 5-foot bed.	11	169	909-920
Chert ooids at 913.5 feet.			
Fossils collected by Bell from 915± feet, *Finkelnburgia finkelnburgi* (Walcott), *Keithiella scrupulosa* Ellinwood, *Leiocoryphe occipitalis* Rasetti, and *Monocheilus truncatus* Ellinwood.			
Calcitic facies: 59 feet thick			
6. Limestone--fine- and coarse-grained; yellowish-gray; residue mostly clay, authigenic feldspar rhombs and glauconite; in ascending sequence as follows: 5 inches, intraformational conglomerate; 25 inches, 0.5- to 2-inch beds, plane to wavy; 4 inches, intraformational conglomerate with coarse-grained limestone on top surface ripple-marked, 15 inches between crests, project 2 inches into unit above; 10 inches, 0.5- to 2-inch beds, plane to wavy; 16 inches, intraformational conglomerate topped by oolitic limestone.	5	174	904-909
7. Limestone and covered--limestone, irregular nodular beds separated by wavy shale films; residue mostly authigenic and detrital feldspar and clay, some glauconite; lower 2 feet not exposed.	4	178	900-904

	Description	Thickness in feet: Interval	Cumulative	Feet above base
8.	Limestone--very fine grained, light olive-gray, beds up to 6 inches.	2	180	898-900
9.	Limestone and shale--limestone fine-grained, light olive-gray, some very small dark specks may be glauconite, beds 0.25 to 0.5 inch; shale light olive-brown films, very silty.	5	185	893-898
10.	Limestone and shale--mottled limestone separating an upper 3-foot stromatolitic zone and a lower 2-foot stromatolitic zone. Lower zone in part aphanitic stromatolites that project into overlying bed, light olive-gray, in part mottled pale yellowish-brown, interspersed in granular, yellowish-brown, interreef limestone containing silicified brachiopods; next foot shale, silty and limestone, pale yellowish-brown, thin-bedded, followed by 2 feet of dolomitic limestone, fine-grained, mottled yellowish-gray and grayish-orange, dolomite weathers in relief; upper stromatolitic zone contains much interreef, bedded, pyritiferous, ripple-marked, granular limestone; some mottled, thin-bedded limestone and shale beneath; residue scarce mostly clay, feldspar rhombs, and glauconite. Silicified brachiopods probably Finkelnburgia.	8	193	885-893
11.	Limestone and shale--limestone fine-grained, yellowish-gray, thinly and irregularly bedded with shale films between beds, shale increases in amount upward, residue mostly clay, authigenic feldspar common.	10	203	875-885
	SHIFT eastward across fault; continue down in section down bluff.			
12.	Limestone and shale--limestone fine-grained, yellowish-gray, irregular beds and nodules with shale films between.	2	205	873-875

	Description	Thickness in feet: Interval	Cumulative	Feet above base
13.	Limestone--medium-grained, yellowish-gray mottled pale-orange, oolitic, glauconitic, one massive bed.	3	208	870-873
14.	Limestone and shale--limestone fine-grained, yellowish-gray, irregular beds and nodules with clay films between.	3	211	867-870
15.	Limestone--medium- to coarse-grained, yellowish-gray, oolitic, glauconitic, two beds 4 and 8 inches. Abundant trilobite fragments and Billingsella.	1	212	866-867
16.	Limestone and shale--limestone, thin irregular beds separated by shale films.	3	215	863-866
17.	Limestone--stromatolites, very fine-grained, light greenish-gray and inter reef limestone, medium- to coarse-grained, top part oolitic, glauconite scarce. Trilobite fragments abundant in coarser grained part.	4	219	859-863
18.	Limestone--very fine grained, yellowish-gray, slightly glauconitic, residue mostly clay, authigenic feldspar in part with detrital centers common, distinctly bedded, beds 1 to 6 inches. Chert in top 2 inches and at 850.5, 851 and 858 feet, light colored, opaque to translucent, in plates parallel to beds. Abundant hexactinellid and lithistid(?) spicules in chert at 851 feet.	9	228	850-859
	Point Peak Member: 114 feet thick			
19.	Limestone, siltstone, and shale--limestone fine-grained, light olive-	15	243	835-850

Description	Thickness in feet: Interval	Cumulative	Feet above base
green to light olive-gray, mostly thin beds separated by dusky yellow-green to grayish-green, argillaceous, micaceous siltstone and silty shale, both contain very fine grained glauconite; residue mostly clay and silt, some glauconite and mica, silt mostly authigenic and detrital feldspar, hexactinellid spicules common; in ascending order as follows: 6 inches, intraformational conglomerate; 22 inches, 0.25- to 2-inch limestone beds separated by silty shale films; 4 inches, intraformational conglomerate; 28 inches, 0.1- to 1-inch spiculiferous limestone beds separated by thicker than normal siltstone and silty shale beds; 18 inches, stromatolites in fossiliferous, granular limestone; 42 inches, 0.25- to 2-inch limestone beds separated by silty shale films; 4 inches, intraformational conglomerate with yellowish-gray pebbles and greenish-gray matrix; 56 inches, 0.25- to 2-inch limestone beds, separated by siltstone and silty shale films.			
From 838 to 840 feet, hexactinellid spicules; from 840 to 841.5 feet, *Plectotrophia* and trilobites.			
SHIFT 2,200 feet southwestward to point of ridge about 900 feet northwest of Morgan Creek and continue down in section along cattle trail; shift made using combination of oolitic and silicified brachiopod-bearing beds. Exposures very poor but best that could be found; 38 feet of section repeated including 23 feet of calcitic facies of San Saba Member.			
20. Limestone and covered--covered part probably mostly thin-bedded siltstone and silty limestone; exposed part limestone as follows: from 806 to 808, 812 to 813, 818 to 819, and 829 to 831 feet, stromatolites and	67	272	806-873

Description	Thickness in feet: Interval	Cumulative	Feet above base
intraformational conglomerate; at 820 feet, stromatolites, may not be in place; from 815 to 816, 828 to 829, and 849 to 850 feet, intraformational conglomerate, that from 828 to 829 feet mostly edgewise, some dark yellowish-orange matrix; from 854 to 860 feet, several 3- to 6-inch intraformational conglomerates; at 861 feet, a spiculiferous block, perhaps float, laterally stromatolites; from 864 to 866 feet, flecked dark yellowish-orange, oolitic, stylolitic; from 870 to 873 feet, light olive-gray, oolitic, stylolitic.			
Silicified Plectotrophia from 812 to 813, 815 to 816(?), and 829 to 831 feet; silicified Billingsella from 849 to 850 and 864 to 866 feet; hexactinellid spicules at 861 feet; and upward-branching calcite fossils from 812 to 813 and at 861 feet were seen in line of section.			
Fossils collected by Ellinwood from 840 feet, Plectotrophia alata (Walcott), Dartonaspis wichitaensis (Resser), and Ptychaspis sp.; from 841 feet, Billingsella corrugata inornata Ellinwood; from 842 feet, Plectotrophia alata (Walcott); from 844 feet, siliceous spicules, Plectotrophia alata (Walcott), Chariocephalus whitfieldi Hall, Dartonaspis wichitaensis (Resser), and Ptychaspis sp.; from 862 feet, Billingsella corrugata inornata Ellinwood, and Idiomesus infimus Longacre; from 864 feet, Briscoia sp., unidentified trilobite, and gastropod.			
Fossils collected by Bell from 845+ feet, siliceous spicules, Plectotrophia alata (Walcott), Chariocephalus whitfieldi Hall, Dartonaspis wichitaensis (Resser), and Stigmacephaloides curvabilis Ellinwood.			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
21.	Covered and limestone--covered part probably siltstone and very thin bedded, fine-grained, light olive-gray to yellowish-gray, silty limestone (the latter seen as float). Bottom bed an 8-inch, flat pebble, intraformational conglomerate; from 777 to 782 feet, a few 0.5- to 2-inch limestone beds, two intraformational conglomerates, pebbles edgewise and horizontal; from 790 to 791 feet, stromatolites and intraformational conglomerate; from 803 to 804 feet, intraformational conglomerate with dark yellowish-orange matrix, moderate reddish-brown where heated sufficiently by brush fires. Fossils collected by Ellinwood from 782 feet, Pseudodicellomus mosaicus (Bell) and Billingsella cf. B. texana Bell.	30	302	776-806
22.	Covered and siltstone--mostly covered; float is fine-grained, thin-bedded, very calcareous siltstone; above 765 feet, beds very thin, poorly exposed; at 738 feet, a 4-inch, pale olive-gray, very fine grained, stromatolitic limestone bed. In Rock Hollow about 15 feet of this interval is very well exposed revealing 0.25- to 1-inch beds of light olive-gray siltstone and very silty limestone that weathers yellowish-gray, separated by thin shale films; bed surfaces are smooth with little evidence of trails or burrows; residue mostly clay and silt, silt both detrital and authigenic feldspar, glauconite common. Fossils collected by Ellinwood from 750 feet, Ellipsoephaloides silvestris Resser; from 763.5 feet, linguloid type B, and Wilbernia pero (Walcott).	40	342	736-776

Description	Thickness in feet: Interval	Cumulative	Feet above base
SHIFT about 4,100 feet northeastward to point about 100 feet east of North Morgan Creek and continue down in section down hillside and bluff to creek bank and then downstream; shift was made using highest red bed exposed and is probably correct within 2 or 3 feet.			
Morgan Creek Limestone Member: 130 feet thick			
23. Limestone and covered--more than half covered. Limestone medium- to coarse-grained; lowest bed white mottled by moderate orange-pink dolomite(?), upward very pale orange, moderate orange-pink, at top grayish-orange-pink to light-brown; slightly glauconitic; residue scarce, mostly silt and very fine sand, mostly feldspar, quartz and opaque minerals common; beds mostly 6 to 8 inches, a few thin nodular beds.	16	358	720-736
Fossils collected by Ellinwood from 721 feet, Angulotreta sp., Pseudodicellomus mosaicus (Bell), linguloid type B, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, Saratogia fria Lochman and Hu, Saratogia modesta (Lochman and Hu), Wilbernia expansa Frederickson, and Wilbernia pero (Walcott).			
Fossils collected by Bell from 721 feet, Angulotreta sp., Pseudoagnostus cf. P. communis (Hall and Whitfield), and Drumaspis texana Resser.			
24. Limestone--mostly medium- to fine-grained, greenish-gray, glauconitic, mica scarce, mostly thick-bedded; a few thin-bedded, argillaceous, micaceous siltstone zones; residue silt and very fine sand, mostly detrital feldspar and glauconite,	27	385	693-720

Description	Thickness in feet: Interval	Cumulative	Feet above base
some authigenic feldspar; mica mostly hydrobiotite, some muscovite; stylolites common. From 693 to 694 feet, one bed; from 694 to 695 feet, thin-bedded, shaly; from 695 to 699 feet, 3 beds, dark yellowish-orange dolomite patches in lower foot; from 699 to 700 feet, one bed, indistinctly nodular at base; from 700 to 701 feet, thin-bedded, shaly; from 701 to 706 feet, massive, 2 beds in upper half; from 706 to 707 feet, recessive, probably shaly; from 707 to 708 feet, one bed with shale partings; from 708 to 710 feet, a few thin beds at top, rest one bed; from 710 to 712 feet, one bed; from 712 to 715 feet, covered; from 715 to 716 feet, recessive, thin-bedded, alternates with thin shale beds; from 716 to 720 feet, coarse-grained, beds 6 to 18 inches trilobitic.			
Fossils collected by Ellinwood from 693 feet, Pseudodicellomus mosaicus (Bell); from 706 feet, Pseudodicellomus mosaicus (Bell), Pseudagnostus cf. P. communis (Hall and Whitfield), Idahoia lirae (Frederickson), Idahoia lirae (Frederickson), var. A Bell in Bell and Ellinwood, Saratogia americana (Lochman and Hu), Wilbernia diademata (Hall), and Wilbernia expansa Frederickson; from 707 feet, Angulotreta sp., linguloid type B, Pelagiella sp., Pseudagnostus cf. P. communis (Hall and Whitfield), Idahoia lirae (Frederickson), Saratogia americana (Lochman and Hu), and Wilbernia diademata (Hall); from 712 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, Saratogia americana (Lochman and Hu), Saratogia fria Lochman and Hu, and Sinuella minuta Knight; from 718 feet, Billingsella texana Bell,			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, Saratogia americana (Lochman and Hu), Saratogia fria Lochman and Hu, Wilbernia cf. W. pero (Walcott), and Sinuella minuta Knight. Fossils collected by Bell from 714 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, and Sinuella minuta Knight; from 718 feet, Billingsella texana Bell.			
25.	Limestone and siltstone--limestone mostly fine-grained, nodular; a few beds and lenses, medium- to coarse-grained, greenish-gray. Siltstone, pale-olive, calcareous, argillaceous, micaceous, surrounds nodules and forms films between limestone beds. Residue silt and very fine sand, mostly detrital feldspar with some authigenic overgrowth, and glauconite, quartz common, mica mostly hydrobiotite, some biotite, altered biotite, and muscovite. Resistant beds 4 to 6 inches thick at 676.5, 678, 680, 682, 686, 688, and 691 feet; the one at 686 feet contains small, orange dolomite patches; 4 inches of recessive very argillaceous, silty limestone 6 inches above base; upward siltstone diminishes for a few feet then remains constant to 683 feet, followed by 2 feet of recessive siltstone beds, then progressively less siltstone to top of interval. Thin sectioned at 679 feet. Limestone--very numerous calcareous brachiopods, some pelmatozoan debris, much glauconite, and some silt in an aphanitic to fine-grained matrix; silt mostly feldspar, some rhombs, some quartz; glauconite mostly	22	407	671-693

Description	Thickness in feet: Interval	Cumulative	Feet above base
fragmental, 0.05 to 0.1 mm; mica common as very thin shreds, mostly altered biotite.			
Fossils collected by Ellinwood from 671 feet, Angulotreta sp., Pseudodicellomus mosaicus (Bell), Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), Taenicephalus shumardi (Hall), and Wilbernia halli (Resser); from 673 feet, Angulotreta sp., Pseudodicellomus mosaicus (Bell), Billingsella cf. coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), Taenicephalus shumardi (Hall), and Wilbernia halli (Resser); from 678 feet, Billingsella cf. B. coloradoensis (Shumard), and B. texanus Bell; from 678.5 feet, Billingsella coloradoensis (Shumard), Conaspis aff. C. testudinatus Ellinwood, and Taenicephalus shumardi (Hall); from 682 feet, Billingsella cf. B. texana Bell and Taenicephalus shumardi (Hall); from 685 feet, Angulotreta cf. A. microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella texana Bell, Pseudagnostus cf. P. communis (Hall and Whitfield), Taenicephalus shumardi (Hall), and Wilbernia expansa Frederickson; from 689 feet, Taenicephalus sp. and Billingsella texana Bell.			
Fossils collected by Bell from 671 feet, Angulotreta sp., Pseudodicellomus mosaicus (Bell), Billingsella cf. coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), and Taenicephalus shumardi (Hall); from 678 feet, Angulotreta sp., Pseudodicellomus mosaicus (Bell), Taenicephalus aff. T. shumardi (Hall), and trilobite gen. and sp. undet.; from 685 feet, Angulotreta sp., Pseudodicellomus mosaicus (Bell),			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Billingsella texana Bell, Taenicephalus shumardi Hall, and Taenicephalus sp.			
26.	Limestone--coarse- to fine-grained, light olive-gray to dark greenish-gray, glauconitic, irregularly to fairly evenly bedded; fine-grained part silty, micaceous; in lower few inches very fine grained, yellowish-gray, irregular pebble- or mudball-like objects, possibly algal in origin; residue similar to above. In ascending order as follows: 29 inches, nodular; 12 inches, fairly regular beds alternate with silty shale films; 15 inches, fine- to medium-grained, somewhat thicker bedded; 6 inches, coarse-grained; 24 inches, fine- to medium-grained; 8 inches, coarse-grained; 18 inches, fine-grained, thin-bedded; 12 inches, coarse-grained, some fine-grained.	10	417	661-671
	Fossils collected by Bell from 661 feet, Orygmaspis llanoensis (Walcott), var. A Longacre, Angulotreta microscopica (Shumard), Ceratreta hebes Bell, Pseudodicellomus mosaicus (Bell), and Pelagiella sp.; from 661.5 feet, Angulotreta microscopica (Shumard), Angulotreta microscopica (Shumard), var. digitalis Bell, Ceratreta hebes Bell, linguloid type B, Pelagiella sp., Orygmaspis llanoensis (Walcott), var. A Longacre, and Pelagiella sp.; from 662 feet, Angulotreta microscopica (Shumard), Pelagiella sp., Billingsella coloradoensis (Shumard), and Orygmaspis llanoensis (Walcott), var. A Longacre; from 663 feet, Angulotreta microscopica (Shumard) and Parabolinoides contractus Frederickson; from 665 feet, Angulotreta microscopica (Shumard) Pseudodicellomus mosaicus (Bell),			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Pelagiella sp., Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), and Wilbernia halli Resser, var. A Ellinwood; from 667 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), linguloid type B, Billingsella coloradoensis (Shumard), Huenella abnormis (Walcott), Orygmaspis llanoensis (Walcott), and Wilbernia halli Resser, var. A Ellinwood; from 668 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Huenella abnormis (Walcott), and Orygmaspis llanoensis (Walcott).			
Fossils collected by Ellinwood from 661 feet, Angulotreta microscopica, var. digitalis Bell, Angulotreta sp., linguloid type B, pelmatozoan columnals and calyx, Billingsella coloradoensis (Shumard), Eoorthis remnicha (Winchell), Irvingella major Ulrich and Resser, and Parabolinoides granulosus Ellinwood; from 661.5 feet, Angulotreta microscopica (Shumard), Ceratreta hebes Bell, linguloid, Billingsella coloradoensis (Shumard), Pseudagnostus cf. P. communis (Hall and Whitfield), Orygmaspis llanoensis (Walcott), var. A Longacre, and Parabolinoides contractus Frederickson; from 662 feet, Angulotreta microscopica (Shumard), linguloid, Pelagiella sp., Billingsella coloradoensis (Shumard), Eoorthis remnicha (Winchell), and Parabolinoides granulosus Ellinwood; from 665 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Pelagiella sp., Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), and Wilbernia? sp.; from 667 feet, Billingsella coloradoensis (Shumard), Huenella abnormis (Walcott), Orygmaspis			

Description	Thickness in feet: Interval	Cumulative	Feet above base
llanoensis (Walcott), and *Wilbernia halli* Resser, var. A Ellinwood; from 668 feet, *Billingsella coloradoensis* (Shumard), *Huenella abnormis* (Walcott), *Conaspis leptoholcus* Longacre, *Conaspis testudinatus* Ellinwood, *Orygmaspis llanoensis* (Walcott), and *Wilbernia halli* Resser, var. A Ellinwood.			
27. Shale, siltstone and limestone--limestone granular, greenish-gray, glauconitic, silty, micaceous, beds mostly less than 0.5 inch, bedding surfaces smooth; shale pale-olive or a little darker, micaceous, mica crinkled, silty, grades to siltstone.	1	418	660-661
Irvingella stand in relief on a bed 2 inches above base, also present in a lens 3 inches beneath top.			
Fossils collected by Ellinwood from 660 feet, *Irvingella major* Ulrich and Resser, *Angulotreta microscopica* (Shumard), *Angulotreta* sp., *Opisthotreta* sp., and linguloid type B.			
Fossils collected by Wilson from 660 feet, *Billingsella coloradoensis* (Shumard), *Eoorthis remnicha* (Winchell), *Angulotreta microscopica*, var. *digitalis* Bell, aff. *Ceratreta hebes* Bell.			
Fossils collected by Bell from 660 feet, *Angulotreta microscopica* (Shumard), linguloid type B, *Billingsella coloradoensis* (Shumard), *Eoorthis indianola* (Walcott), *Eoorthis remnicha* (Winchell), *Comanchia amplooculate* (Frederickson), *Irvingella major* Ulrich and Resser, *Parabolinoides contractus* Frederickson, and *Parabolinoides granulosis* Ellinwood.			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
28.	Limestone--coarse-grained, two shades of yellowish-brown to yellowish-gray, slightly glauconitic, a few shaly beds near top, slightly silty, bottom foot oolitic, beds irregular, average about 4 inches. Fossils collected by Bell from 656 feet, Linnarssonella girtyi Walcott, ocnerorthid brachiopod, Camaraspis convexa (Whitfield), Elvinia roemeri (Shumard), and unknown pygidium; from 657 feet, Linnarssonella girtyi Walcott, Angulotreta sp., linguloid, ocnerorthid brachiopod, Dellea suada (Walcott), Dokimocephalus sp., Elvinia roemeri (Shumard), Morosa simplexa Stitt, and Pterocephalia sanctisabae Roemer; from 659 feet, Angulotreta sp., linguloid type A, Comanchia amplooculata (Frederickson), and Irvingella major Ulrich and Resser. Fossils collected by Wilson from 659 feet, Angulotreta sp., linguloid type B, Comanchia amplooculata (Frederickson), Elvinia roemeri (Shumard), and Irvingella major Ulrich and Resser. Fossils collected by Ellinwood from 659 feet, Angulotreta sp., micromitrid, linguloid type B, Comanchia amplooculata (Frederickson), and Irvingella major Ulrich and Resser.	5	423	655-660
29.	Limestone--coarse-grained; various shades of gray; glauconitic, from 653 to 654 feet irregular dolomite patches a foot or two in length weather pale yellowish-orange, slightly lighter colored on fresh breaks; slightly silty; beds irregular, wavy; recessive. In ascending order as follows: 6 inches, shale and limestone, recessive; 24 inches, yellowish-gray to light olive-gray, glauconitic,	12	435	643-655

Description	Thickness in feet: Interval	Cumulative	Feet above base
nodular to irregularly lenticular; 9 inches, yellowish-gray, one bed; 21 inches, light olive-gray streaked grayish olive-green, glauconitic, a few ooids, wavy bedded and nodular, stylolitic; 18 inches, similar to above, more glauconite; 7 inches, limestone thin-bedded, nodular alternates with shale films, recessive; 59 inches, yellowish-gray to light olive-gray, alternates with pale-olive shale films, shale more abundant in lower part, mostly nodular irregular beds.			
Fossils collected by Wilson from 647 feet, Linnarssonella girtyi Walcott, Angulotreta sp., linguloid type B, Burnetiella urania (Walcott), Camaraspis convexa (Whitfield), Dellea suada (Walcott), Elvinia roemeri (Shumard), Pterocephalia sanctisabae Roemer; from 650 feet, Camaraspis convexa (Whitfield), Elvinia roemeri (Shumard), Irvingella major Ulrich and Resser, Linnarssonella girtyi Walcott, Angulotreta? sp., linguloid, and spicules aff. type B; from 654 feet, Dellea suada (Walcott), Elvinia roemeri (Shumard), pelmatozoan columnals, Linnarssonella girtyi Walcott, Angulotreta sp. and Paterina sp. fragments.			
30. Limestone--coarse-grained, grayish-orange-pink, light brownish-gray, yellowish-gray; glauconitic; from 640.5 to 641 feet, shaly; wavy bedded.	6	441	637-643
Fossils collected by Wilson from 640.5 feet, Linnarssonella girtyi Walcott, Pseudagnostus cf. P. communis (Hall and Whitfield), Cliffia latagenae (Wilson), Deadwoodia duris (Walcott), Elvinia roemeri (Shumard), Irvingella major Ulrich and Resser, Kindbladia			

Description	Thickness in feet: Interval	Cumulative	Feet above base
affinis (Walcott), Plataspella anatina (Resser), and Xenocheilos minutum Wilson; from 641.5 feet, Linnarssonella girtyi Walcott, Deadwoodia duris (Walcott), and Kindbladia cf. K. wichitaensis (Resser); from 642 feet, Linnarssonella girtyi Walcott, Iddingsia robusta (Walcott), Plataspella anatina (Resser), and Pterocephalia sanctisabae Roemer.			
SHIFT downstream along beds for better exposure. Rock in interval from 633.5 to 643 forms rapids.			
31. Limestone--mostly coarse-grained, some medium- and fine-grained; various shades of red, green and gray; in part very glauconitic; sand and silt common, mostly quartz and detrital feldspar; in part very shaly; inch-size, mudball-like objects common at 630 and from 633 to 635 feet, dark yellowish-orange, those from 633 to 635 feet have yellowish-gray interiors and a peripheral zone of light-brown to dark yellowish-orange; beds mostly irregular and wavy from stylolites and original depositional features, mostly less than a foot to very thin and recessive. In ascending order as follows: 6 inches, covered; 12 inches, pale-red, one bed; 16 inches, pale-red to grayish olive-green, some irregular, thin glauconite and shale streaks, nodular from cross-bedding, stylolitic; 6 inches, pale-olive to brownish-gray shale and glauconitic limestone, nodular, recessive; 14 inches, light brownish-gray, in part greenish-gray where glauconitic, some original depositional irregularities in grayish olive-green glauconitic zones, an inch of grayish-red shale, some irregular, dark yellowish-orange inch-size mudball-like objects, nodular; 18 inches, light	16	457	621-637

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	brownish-gray to light olive-gray, stylolitic; 69 inches, alternating beds of limestone, pale-red to light brownish-gray, average 1 to 2 inches, none over 6 inches, and recessive zones of shale, brownish-gray, grayish olive-green where glauconitic, mostly evenly bedded, only slightly disturbed by burrows; 5 inches, shale, pale-olive to grayish-olive, sparsely glauconitic, recessive; 22 inches, thin wavy beds and cross-beds of glauconite, stylolitic, lower 6 inches recessive; 9 inches, light brownish-gray, one bed; 11 inches, limestone, nodular and shale yellowish-gray to light olive-gray with irregularly distributed, dark grayish-green glauconite; 4 inches, light brownish-gray, one bed.			
	Fossils collected by Wilson from 622.5 feet, Cheilocephalus sp., Kindbladia wichitaensis (Resser), Plataspella anatina (Resser), and Linnarssonella girtyi Walcott; from 629 feet, Kindbladia wichitaensis (Resser), Plataspella anatina (Resser), Linnarssonella girtyi Walcott; from 633 feet, Elvinia roemeri (Shumard), Kindbladia wichitaensis (Resser), Linnarssonella girtyi Walcott, and Angulotreta sp.; from 636 feet, Elvinia roemeri (Shumard), Kindbladia wichitaensis (Resser), Linnarssonella girtyi Walcott, and Pseudodicellomus? sp.			
32.	Limestone--coarse-grained, grayish-red to pale-red; glauconite common; some calcareous sandstone at base to slightly sandy at top, sand fine to very coarse, well-rounded, poorly sorted; beds wavy, in part from stylolites, in part from original depositional irregularities, mostly 1 to 3 feet, a few as little as 6 inches; crops out boldly.	15	472	606-621

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Bell from 606 and 610 feet, Linnarssonella girtyi Walcott; from 615 feet, Cheilocephalus sp., Linnarssonella girtyi Walcott, and linguloid; from 620 feet, Linnarssonella sp. and linguloid.			
Fossils collected by Wilson from 611 feet, Kindbladia cf. wichitaensis (Resser); from 619.5 feet, Kindbladia cf. wichitaensis (Resser), Linnarssonella girtyi Walcott, and ferruginous pelmatozoan plates; from 620.5 feet, Kindbladia wichitaensis (Resser), Linnarssonella girtyi Walcott, and linguloid.			
SHIFT 2,900 feet airline almost due south to top of Welge Sandstone north of road along bluff north of an arm of Lake Buchanan at a point about 1,600 feet airline west-northwest of ford across South Morgan Creek.			
Welge Sandstone Member: 15 feet thick			
33. Sandstone--medium to very coarse grained; from 591 to 593 feet, greensand, recessive; from 593 to 600 feet, very glauconitic, recessive; from 600 to 605 feet, light olive-gray, mostly recessive; bottom foot, one bed; grains well-rounded, mostly rough from reconstitution.	15	487	591-606
Fossils collected by Bell from 592 feet, Linnarssonella girtyi Walcott, Cheilocephalus aff. C. brachyops Palmer, and Elvinia roemeri (Shumard); from 603 feet, Linnarssonella girtyi Walcott.			
Fossils collected by Wilson from 592 feet, Elburgia aff. E. granulosa (Hall and Whitfield).			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Welge Sandstone in this section is very glauconitic and unlike the nonglauconitic Welge occurring westward. It is slightly more resistant to weathering in this section than the underlying Lion Mountain Sandstone; however, here the two members are separated primarily on the basis of their fossils.			
Riley Formation: 591 feet thick			
Lion Mountain Sandstone Member: 47 feet thick			
34. Greensand, shale, sandstone, limestone, and covered--from 563 to 566 feet, greensand, dusky-green; composed about equally of glauconite and quartz sand; numerous lenses of yellowish-gray, cross-bedded, trilobite coquinite; sand mostly medium to very coarse, a few granules, poorly sorted, mostly well-rounded, some angular and all rough from reconstitution. From 566 to 569 feet, greensand, dusky-green; from 569 to 574 and 583 to 587 feet, mostly covered; from 574 to 575 feet, sandstone very coarse grained, glauconitic; from 575 to 577 and 582 to 583 feet, mostly greensand, some brown shale; from 577 to 582 and 587 to 590 feet, greensand, upper interval argillaceous; from 590 to 591 feet, sandstone coarse-grained, glauconitic.	28	515	563-591
Fossils collected by Bell from 563 feet, paterinid, *Dysoristus lochmanae* Bell, linguloids types A and B, columnals, *Aphelaspis* cf. *A. constricta* Palmer, *Dunderbergia* cf. *D. variagranula* Palmer, and *Apsotreta expansa* Palmer; from 568 feet, paterinid, linguloids types A and B, *Blandicephalus texanus* Palmer, and *Dunderbergia* aff. *D. nitida* (Hall and			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Whitfield); from 571 feet, Apsotreta expansa Palmer, paterinid, linguloids types A and B, Cheilocephalus breviloba (Walcott), and Dytremacephalus granulosus Palmer; from 590.1 feet, Apsotreta expansa Palmer; from 589.9-590.2 feet, Linnarssonella sp. and Apsotreta sp.			
Fossils collected by Palmer from 570 feet, Cheilocephalus breviloba (Walcott), Dunderbergia variagranula Palmer, Aphelaspis conveximarginata (Palmer), Angulotreta triangularis Palmer, leperditiid(?) ostracode; Bell identified in addition Dysoristus lochmanae, Apsotreta expansa, linguloids, and a paterinid; from 574 feet, Apsotreta expansa Palmer and Dysoristus lochmanae Bell.			
Fossils collected by Wilson from 570± feet, linguloids types A and B, paterinid, Cheilocephalus breviloba (Walcott), and Dunderbergia sp.			
SHIFT 85 feet eastward; continue down in section to foot of cliff crossing road at 560 feet.			
35. Greensand and limestone--greensand dusky-green, about equally glauconite and quartz sand; limestone yellowish-gray lenses of cross-bedded trilobite coquinite; sandy, sand mostly medium to very coarse, poorly sorted, rounded, rough from reconstitution.	3	518	560-563
Fossils collected by Palmer from 561 feet, Aphelaspis walcotti Resser, Dunderbergia variagranula Palmer, Pseudagnostus cf. P. communis (Hall and Whitfield), and Angulotreta triangularis Palmer. In addition Bell lists Dytremacephalus granulosus Palmer, Aphelaspis sp., and linguloids types A and B.			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
36.	Poorly exposed.	12	530	548-560
	Fossils collected by Bell from 550 feet, paterinid, linguloids types A and B, Aphelaspis cf. A. constricta Palmer, and Aphelaspis sp.			
37.	Limestone--coarse-grained; glauconitic; sandy, sand medium to coarse, rounded, rough from reconstitution; trilobitic.	1	531	547-548
	Fossils collected by Palmer from 547 feet, Aphelaspis constricta Palmer, Listroa longifrons (Palmer), Aphelaspis walcotti Resser, Cheilocephalus breviloba (Walcott), Dunderbergia variagranula Palmer and Angulotreta triangularis Palmer.			
38.	Poorly exposed.	3	534	544-547
	Fossils collected by Bell from 545 feet, paterinid, Angulotreta triangularis digitalis Palmer, linguloid type A, coprolite?, and Aphelaspis spp.			
	Cap Mountain Limestone Member: 204 feet thick			
39.	Limestone--mostly coarse-grained; greenish-gray to olive-gray; sandy, sand very fine to medium, slightly silty, silt and very fine sand mostly quartz, some detrital feldspar in part with authigenic overgrowth; glauconitic; cross-bedded on small scale; massive; some yellowish-gray trilobite coquinite from 530 to 540 feet.	14	548	530-544
	Fossils collected by Palmer from 530 feet, Aphelaspis walcotti Resser, Cheilocephalus breviloba (Walcott), and leperditiid? ostracode; from 532 feet, Aphelaspis spinosus Palmer and			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Glaphyraspis ornata (Lochman); at 538 feet, Aphelaspis walcotti Resser, Aphelaspis conveximarginata (Palmer), Angulotreta triangularis Palmer, Dictyonina perforata Palmer, and leperditiid(?) ostracode. Fossils collected by Bell from 531 feet, linguloid type A; from 535 feet, Angulotreta sp. or Apsotreta sp., and Aphelaspis sp.; from 539± feet, Angulotreta triangularis digitalis Palmer; from 541 feet, Angulotreta triangularis Palmer, Angulotreta triangularis digitalis Palmer, Dictyonina perforata Palmer, paterinid, Aphelaspis sp., and Taenora(?) platifrons (Palmer).			
40. Greensand and limestone--greensand, greenish-black, about equally glauconite and quartz sand, friable, recessive, hematite concretions and lenticular cross-beds of trilobite coquinite common; sand very fine to medium, mostly well-rounded. Fossils collected by Palmer from 529 feet, Cheilocephalus breviloba (Walcott), Coosella perpluxus (Palmer), Coosina cf. C. ariston (Walcott), Glaphyraspis ornata (Lochman), Tricrepicephalus thoosa (Walcott), Dictyonina perforata Palmer, and leperditiid(?) ostracode.	2	550	528-530
SHIFT 3,400 feet south-southwestward to shallow drain on western side of Spider Mountain (Baldy Mountain); continue down in section down drain.			
41. Limestone--in part fine-grained, greenish-gray to light olive-gray, silty; in part coarse-grained, mostly light olive-gray speckled by yellowish-gray; some yellowish-gray, glauconitic, trilobitic; silty, above 515 feet sandy, sand fine to	23	573	505-528

Description	Thickness in feet: Interval	Cumulative	Feet above base
very fine, sand and silt mostly detrital feldspar and quartz. From 505 to 506 feet, fine-grained; from 506 to 515 feet, coarse-grained, some dark yellowish-brown dolomite patches from 507 to 508 feet; from 515 to 521 feet, fine-grained, mottled, mostly recessive; from 521 to 522 feet, coarse-grained; from 522 to 528 feet, fine-grained, recessive except for resistant 6-inch bed at top, in part poorly exposed. Fossils collected by Bell from 505 feet, spicule type B, Diraphora? sp., Kingstonia (Ucebia) pontotocensis (Lochman) and Llanoaspis undulata Lochman; from 518 feet, Coosina cf. C. ariston (Walcott), Crepicephalus cf. C. iowensis (Owen), Kingstonia (Ucebia) pontotocensis (Lochman); from 522 feet, Curticia? sp., Coosia cf. C. albertensis Resser, Coosina cf. C. ariston (Walcott), Crepicephalus cf. C. iowensis (Owen), and Llanoaspis peculiaris (Resser). Fossils collected by Palmer from 516 feet, Coosia cf. C. albertensis, Resser, Crepicephalus cf. C. iowensis (Owen), Llanoaspis peculiaris (Resser) Coosina cf. C. ariston (Walcott), and Tricrepicephalus thoosa (Walcott).			
SHIFT about 450 feet west-southwestward along beds to edge of cliff; continue down in section to a point 5 feet below operating level of Lake Buchanan.			
42. Limestone--coarse to very coarse grained; mostly very glauconitic, glauconite coarse; a few beds oolitic; silty, some very fine sand; a few cross-beds of trilobite coquinite; weathers into lenticular plates. Fossils collected by Bell from 500 feet, Opisthotreta depressa Palmer,	6	579	499-505

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	spicule type B, linguloid, Coosina cf. C. ariston (Walcott), Llanoaspis undulata Lochman, Meteoraspis metra (Walcott), and Tricrepicephalus thoosa (Walcott). Fossils collected by Palmer at 504 feet, Llanoaspis undulata Lochman, Llanoaspis undulata granulata Palmer, Coosina cf. C. ariston (Walcott), and spicule type B.			
43.	Limestone--medium- to coarse-grained, a few beds fine-grained; mostly moderate yellowish-brown mottled and speckled by dark yellowish-orange, irregular-shaped objects (possibly intraclasts), some light olive-gray mottled by white, some dark yellowish-brown; sandy and silty, sand very fine; glauconitic; oolitic; bedding wavy; vertical solution joints up to 3 feet wide. Fossils collected by Palmer from 475 feet, Kingstonia (Ucebia) pontotocensis (Lochman), Llanoaspis modesta (Lochman), Meteoraspis metra (Walcott), Tricrepicephalus thoosa (Walcott), Diraphora sp., Opisthotreta depressa Palmer, spicules types A and B; from 478 feet, Crepicephalus australis Palmer, Meteoraspic metra (Walcott), and spicule type B; from 483 feet, Protillaenus sp., Crepicephalus australis Palmer, Llanoaspis modesta (Lochman), Opisthotreta depressa Palmer, and spicule type B; from 485 feet, Kormagnostus simplex Resser, Meteoraspis metra (Walcott), Tricrepicephalus thoosa (Walcott), and spicule type B; from 494 feet, Opisthotreta depressa Palmer and spicule type B. Fossils collected by Bell from 487 feet, Coosina sp.	26	605	473-499

	Description	Thickness in feet: Interval	Cumulative	Feet above base
44.	Limestone--mostly fine-grained, light olive-gray to greenish-gray and grayish-orange, mottled, glauconitic, glauconite fine, silty, distinctly bedded; some medium- to coarse-grained, greenish-gray to light olive-gray, yellowish-gray and similar shades, in part sandy, sand very fine, glauconitic, glauconite coarse, trilobitic; sand and silt mostly brown, cloudy, detrital feldspar, some authigenic overgrowth, a few rhombs, quartz common; pronged and spine-like objects in bottom foot resemble those in the "bronze beds."	28	633	445-473

Fossils collected by Palmer from 446 feet, Blountia sp., Coosella beltensis Lochman, Coosella granulosa Rasetti, Coosella sp., Deiracephalus asteri (Walcott), Hardyoides cf. H. tenera (Walcott), Kormagnostus simplex Resser, Meteoraspis metra (Walcott), Tricrepicephalus thoosa (Walcott), trilobites gen. and sp. undet. 3, Opisthotreta depressa Palmer, Paterina sp., Kinsabia variegata Lochman, and spicule type A; from 453 feet, Arcuolimbus convexus Palmer, Blountia sp., Coosella beltensis Lochman, Densonella sp., Deiracephalus asteri (Walcott), Kingstonia (Ucebia) pontotocensis (Lochman), Kormagnostus simplex Resser, Meteoraspis metra (Walcott), Tricrepicephalus thoosa (Walcott), trilobite gen. and sp. undet., Opisthotreta depressa Palmer, and spicule type A; from 464 feet, Coosella cf. C. widnerensis (Resser), Kingstonia (Ucebia) pontotocensis (Lochman), Kormagnostus simplex Resser, Tricrepicephalus thoosa (Walcott), Opisthotreta depressa Palmer, Kinsabia variegata Lochman, and spicule type B; from 469 feet,

Description	Thickness in feet: Interval	Cumulative	Feet above base
Coosella cf. C. widnerensis (Resser), Crepicephalus australis Palmer, Meteoraspis metra (Walcott), Tricrepicephalus thoosa (Walcott), and Opisthotreta depressa Palmer; from 472 feet, Coosella cf. C. widnerensis (Resser), Coosella sp., Llanoaspis modesta (Lochman), Diraphora sp., and spicule type B. Fossils collected by Bell from 446 feet, Meteoraspis metra (Walcott), and Tricrepicephalus texanus (Shumard); from 449 feet, paterinid linguloids types A and B, Kinsabia variegata Lochman, "Agnostus" valentinus Lochman, Coosia connata (Walcott), Meteoraspis metra (Walcott), and Tricrepicephalus thoosa (Walcott); from 462 feet, Meteoraspis metra (Walcott).			
45. Limestone and siltstone--mostly very silty limestone to very calcareous siltstone; fine-grained; light olive-gray of several shades to dusky-yellow and pale-olive, mottled; slightly glauconitic; much very fine sand; thin-bedded, bedding wavy, poorly exposed except in cliff where it forms a smooth surface; a few medium- to coarse-grained beds, glauconitic, trilobitic; sand and silt mostly brown, cloudy, detrital feldspar, some authigenic overgrowth, a few rhombs, some heavy minerals and quartz.	21	654	424-445
46. Limestone--similar to that from 424 to 445 feet, not exposed when lake is full.	5	659	419-424

SHIFT 3 miles in a direction east-southeast to a point on the west face of Potato Hill 14 feet beneath its summit; continue down in section down west face of hill. The shift was made placing special emphasis on the fossils from 418 to 419 feet and less emphasis on the lithologic sequence.

	Description	Thickness in feet: Interval	Cumulative	Feet above base
47.	Limestone--medium- to coarse-grained; mostly greenish-gray, top 2 inches moderate yellowish-orange; very glauconitic; wavy beds possibly caused by numerous stylolites; very resistant to weathering, forms lip of steep slope. Fossils collected by Palmer from 419 feet, Blountia sp., Coosia beltensis Lochman, Coosella granulosa Rasetti, ?Coosella sp., Coosia connata (Walcott), Genevievella cf. G. spinosa Lochman, Hardyoides cf. H. tenera (Walcott), Kormagnostus simplex Resser, Norwoodia quadrangularis (Whitfield), Tricrepicephalus thoosa (Walcott), Tricrepicephalus texanus (Shumard), trilobites gen. and sp. undet. 2 or 3, Apsotreta orifera Palmer, Diraphora sp., Opisthotreta depressa Palmer, Kinsabia variegata Lochman, spicules types A and B. Fossils collected by Bell from 419 feet, Angulotreta sp., Apsotreta orifera Palmer, Opisthotreta depressa Palmer, Kinsabia variegata Lochman, spicule type B, Coosia connata (Walcott), and Tricrepicephalus texanus (Shumard); from 420 feet, Angulotreta sp., Apsotreta orifera Palmer, Opisthotreta depressa Palmer, Curticea? sp., paterinid, Kinsabia variegata Lochman, spicule type B, and Coosella sp.	1	660	418-419
48.	Limestone and siltstone--mostly very silty limestone, some very calcareous siltstone; fine-grained; mostly yellowish-gray, weathers pale to dark yellowish-orange and very pale orange mottled and streaked by pale-brown; much very fine sand, some fine sand in lower part, sand and silt mostly detrital feldspar, both clear and cloudy, some authigenic overgrowth, rhombs common, quartz common, a few heavy minerals;	42	702	376-418

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	glauconite very scarce; bedding distinct, closely spaced, plane to wavy, beds 2 to 6 inches. Fossils collected by Bell from 414 feet, Opisthotreta depressa Palmer, linguloid, Kinsabia variegata Lochman, spicule type B, Coosella beltensis Lochman, Coosia connata (Walcott), Tricrepicephalus thoosa (Walcott), and Tricrepicephalus texanus (Shumard).			
49.	Limestone--pale-brown to reddish-brown; sandy, sand medium to coarse, mostly quartz; oolitic; some wavy bedding; massive. Fossils collected by Palmer from 373 feet, Cedaria eurycheilos Palmer, Meteoraspis cf. M. robusta Lochman, Syspacheilus cf. S. camurus Lochman, Paterina sp., and Kinsabia variegata Lochman. Fossils collected by Bell from 374 feet, Curticea? sp., paterinid, linguloid, and Kinsabia variegata Lochman.	6	708	370-376
50.	Limestone--medium-grained; moderate yellowish-brown to moderate-brown mottled dark yellowish-orange; very sandy, sand very fine to coarse, in lower sample some very coarse, a few granules, larger grains mostly well-rounded; beds 10 inches and less.	11	719	359-370
51.	Sandstone--mostly coarse to very coarse grained, some medium-grained; grayish-brown, dark yellowish-brown, moderate yellowish-brown to moderate brownish-yellow, in part mottled; very calcareous, in part verges on very sandy limestone; a few 0.25-inch quartz grains, 0.2-inch grains	19	738	340-359

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	common, grains mostly very well rounded, some smooth, many rough from reconstitution. From 340 to 353 feet, massive; from 353 to 354.5 feet, recessive, some thin, argillaceous beds in lower part; from 354.5 to 355 feet, coarse grained, one bed; from 355 to 356 feet, recessive, argillaceous; from 356 to 359 feet, coarse to very coarse grained, one bed.			
	Fossils collected by Bell from 344 feet, Dicellomus sp.			
	Hickory Sandstone Member: 340 feet thick			
52.	Sandstone and shale--mostly sandstone, medium- to coarse-grained, some very coarse and fine-grained; grayish-red, very dusky-red, pale to moderate yellowish-brown, dark yellowish-orange and intermediate colors; some silty shale in thinner bedded intervals. From 275 to 277, 278 to 280, and 281 to 282 feet, thin-bedded, upper interval light-brown; from 277 to 278 feet, grayish-red mottled dark yellowish-orange; from 280 to 281 feet, grayish-red; from 282 to 283 feet, fine to very coarse grained, larger grains well-rounded, rough from reconstitution, one bed; from 283 to 289 feet, medium to very coarse grained, grains mostly well-rounded, rough from reconstitution, feldspar scarce, beds 6 inches and less; from 289 to 296 feet, medium- to coarse-grained, very dusky red, grains mostly well-rounded, a few rough from reconstitution, mostly quartz, feldspar scarce, beds 1 to 2 feet; from 296 to 299 feet, thin-bedded, poorly exposed; from 299 to 340 feet, mostly medium- to coarse-grained, some fine-grained, a few granules, very dusky red to grayish red, some minor	65	803	275-340

Description	Thickness in feet: Interval	Cumulative	Feet above base
cross-bedding, grains mostly smooth, well-rounded, granules mostly angular, feldspar common in lower few samples. Fossils collected by Palmer at 283 feet, Bolaspidella sp. and Cedarina cordillerae (Howell and Duncan); at 299 feet, Cedarina cordillerae (Howell and Duncan) and Kormagnostus simplex Resser; at 322 feet, ?Cedaria eurycheilos Palmer. Fossils collected by Bell from 275 feet, Dicellomus sp., Bolaspidella prooculis Palmer, and Cedarina cordillerae (Howell and Duncan); from 283 feet, Cedarina cordillerae (Howell and Duncan), and Blountia sp.; from 288 feet, Ankoura sp., Blountia sp., Cedaria sp., and Cedarina cordillerae (Howell and Duncan); from 300 feet, Cedaria eurycheilos Palmer; from 315 feet, Kormagnostus simplex Resser, and Cedarina cordillerae (Howell and Duncan); from 320 and 328 feet, Cedaria eurycheilos Palmer.			
SHIFT about 100 feet northward along beds; continue down in section down west face of Potato Hill.			
53. Sandstone and shale--sandstone mostly medium to very coarse grained; moderate-brown to moderate yellowish-brown and pale to dark yellowish-orange; grains well-rounded, mostly rough from reconstitution; alternating thick- and thin-bedded intervals. From 261 to 262 feet, one bed; from 262 to 264 feet and 266.5 to 271.5 feet, sandstone and shale, thin-bedded; from 264 to 266.5 feet, beds 4 to 12 inches; from 271.5 to 275 feet, very dusky red mottled dark yellowish-orange, cross-bedded, beds up to 2 feet. Phosphatic brachiopods numerous.	14	817	261-275

	Description	Thickness in feet: Interval	Cumulative	Feet above base
54.	Sandstone, shale, and covered--very poorly exposed, an inch or two of sandstone every foot or so, medium-grained, yellowish-gray with dark-yellow mottles and streaks; glauconitic; sand mostly medium to coarse, some fine, very coarse and a few granules, mostly angular, in part reconstituted, some grains rounded; intervals of sandy shale scarce; at 245 feet, sandstone, dark yellowish-brown mottled moderate yellowish-brown, 3-inch bed with a 6-inch coarse-grained sandstone bed above it; at 253 and 256 feet, 4-inch sandstone beds, mottled, somewhat lighter in color. Fossils collected by Bell from 235 feet, Dicellomus sp.	30	847	231-261
55.	Poorly exposed. Fossils collected by Bell from 229 and 230 feet, Dicellomus sp.	5	852	226-231
56.	Sandstone--fine- to coarse-grained, grayish-red to moderate-brown, grains very rough from reconstitution, mostly quartz, some feldspar, in lower part beds a foot or more, in upper part mostly 4 inches and less. Fossils collected by Bell from 221 feet, Dicellomus sp. and Bolaspidella burnetensis (Walcott). Fossils collected by Palmer from 222 feet, Bolaspidella burnetensis (Walcott).	7	859	219-226
57.	Sandstone and shale--mostly sandstone, fine- to medium-grained, dusky-yellow mottled dark yellowish-brown; grains very rough from reconstitution; glauconitic; thin-bedded; poorly exposed in lower part. Phosphatic brachiopod fragments present.	2	861	217-219

	Description	Thickness in feet: Interval	Cumulative	Feet above base
58.	Sandstone and covered--covered from 202 to 209, 210 to 214, and 215 to 217 feet; rest sandstone, grayish-red, some dark yellowish-orange specks.	15	876	202-217
59.	Sandstone--medium to very coarse grained, a few granules; bottom bed grayish-red, 2.5 feet thick, an irregularly silicified top surface; rest moderate-brown to moderate yellowish-brown, beds 4 to 6 inches; grains mostly angular, feldspar common, glauconite very scarce.	6	882	196-202
	A few phosphatic brachiopod fragments.			
60.	Sandstone and shale--from 190 to 193 feet, sandstone, medium to very coarse grained, moderate-brown, some mudball-like objects along strike, beds about 8 inches; from 193 to 196 feet, sandstone and shale, glauconitic, recessive, thin-bedded.	6	888	190-196
	Phosphatic brachiopods common.			
	SHIFT 1,700 feet south-southeast along beds; continue down in section across flat for about 1,000 feet. Exposures on flat are poor and thickness measured could be in error. An attempt to trace beds from near southern edge of flat along a narrow valley to near foot of Potato Hill met with questionable success; however, the thickness used for this part of the section was measured between the bed traced and the bed at 190 feet in the Potato Hill part of the section.			
61.	Covered.	2	890	188-190
62.	Sandstone--medium to very coarse grained; dark-yellowish to moderate yellowish-brown and dusky yellowish-brown; grains angular to subrounded, some reconstituted, feldspar scarce; slumped but essentially in place.	2	892	186-188

	Description	Thickness in feet: Interval	Cumulative	Feet above base
63.	Covered.	8	900	178-186
64.	Sandstone--coarse to very coarse grained, dark yellowish-brown to moderate yellowish-brown, moderate reddish-brown, dark yellowish-orange with black specks; grains angular, much reconstitution, feldspar scarce; slumped but essentially in place.	2	902	176-178
65.	Covered.	5	907	171-176
66.	Sandstone--fine to very coarse grained; lower part moderate yellowish-brown and grayish-red; middle part mottled, a wide variety of colors, dark yellowish-orange, dark yellowish-brown, dusky yellowish-brown, dark grayish-brown, grayish-brown, dusky-brown, light-brown, moderate-brown, moderate yellowish-brown; upper part dark yellowish-brown, moderate yellowish-brown, dusky yellowish-brown, pale reddish-brown, some black specks; grains mostly angular in part from reconstitution, feldspar abundant in upper part; some cuneiform markings and suggestions of burrows; blocks mostly tilted but essentially in place. Phosphatic brachiopod fragments common.	27	934	144-171
67.	Sandstone--fine to very coarse grained, a few granules; grayish-orange to dark yellowish-orange mottled in part very pale orange, some moderate yellowish-brown; some indication of burrows; elongate pits on top surface may be cuneiform markings; grains rounded but rough, poorly sorted, feldspar scarce; indistinctly cross-bedded, beds up to 18 inches.	10	944	134-144
68.	Sandstone--mostly medium to very coarse grained, some fine-grained, a	28	972	106-134

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	few granules; a wide variety of colors including moderate yellowish-brown, grayish-red, dark yellowish-orange, very pale orange, grayish-brown, dark yellowish-brown, dusky-red, moderate-brown, dark yellowish-orange, dark reddish-brown; in part mottled; grains mostly rough and angular, some rounded; from 120 to 130 feet, some ooids of iron oxide; mostly slumped. Numerous phosphatic brachiopods and a few trilobite(?) fragments in dusky-red bed near top, phosphatic brachiopods common in float.			
69.	Sandstone--fine to very coarse grained, granules scarce; mostly dark yellowish-orange, light-brown, moderate-brown, grayish-orange, moderate yellowish-brown; grains mostly rounded but very rough, mostly quartz, feldspar scarce, poorly sorted; cross-bedded. From 70 to 72, 74 to 76, 79 to 85, 92 to 93, and 96 to 102 feet, poorly exposed, probably thin-bedded; from 72 to 74 feet, one bed; from 76 to 77 feet, thin-bedded; from 77 to 79 feet, one bed; from 85 to 86 feet, one bed, Cruziana on bottom surface, cuneiform markings on top surface; from 86 to 92, 93 to 96, and 102 to 106 feet, beds 4 to 8 inches, some indication of burrows in upper interval.	36	1,008	70-106
70.	Sandstone--fine to very coarse grained, many granules; dark yellowish-orange, light-brown, moderate-brown, grayish-brown, pale reddish-brown, moderate reddish-brown, yellowish-brown, in part mottled; some grains angular, others rounded, all surfaces rough; some clay matrix; massive, beds about 1.5 to 2 feet, poorly defined.	25	1,033	45-70

Description	Thickness in feet: Interval	Cumulative	Feet above base
71. Covered.	20	1053	25-45
72. Sandstone and conglomerate--conglomerate angular quartz cobbles up to 6 inches in basal bed; near middle a foot bed of angular quartz conglomerate, pebbles mostly an inch, range up to 3 inches, matrix coarse sand; pebbles common elsewhere. Sandstone very coarse grained; dark yellowish-orange, pale-brown, grayish-orange; grains poorly sorted; cross-bedded, beds mostly 6 to 12 inches.	5	1058	20-25
This interval, about 200 feet east of the line of section, rests on Precambrian Valley Spring Gneiss. Farther east, a sharp ridge of Valley Spring Gneiss reaches an even higher stratigraphic level in the Hickory Sandstone.			
73. Sandstone--fine to very coarse grained, one bed contains 0.5-inch quartz pebbles; pale reddish-brown, grayish-orange, dark yellowish-orange, mottled; grains poorly sorted, mostly quartz, microcline common; fine-grained part argillaceous, a 3-inch shale lens at 15 feet; a vertical structure in many beds may be caused by burrows, borings, or possibly freezing; cross-bedded, beds mostly 4 to 18 inches.	9	1067	11-20
74. Covered.	5	1072	6-11
75. Sandstone--very coarse grained, some granules up to 0.25 inch; grains poorly sorted, mostly very rough, a few partly rounded, mostly quartz, some microcline; cuneiform markings in upper part.	1	1073	5-6
SHIFT about 200 feet downstream along beds; continue down in section.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
76. Sandstone--some beds fine-grained, argillaceous, others very coarse, some granules; mostly pale red to grayish-orange mottled moderate orange-pink, argillaceous beds more brightly colored; grains poorly sorted, mostly rough, angular to partly rounded, mostly quartz, some microcline; vertical structure in a bed near middle may be caused by burrows, borings, or possibly freezing; beds mostly 6 to 18 inches.	5	1,078	0-5

The base of the Hickory Sandstone is not exposed; however, no more than 4 or 5 feet could be present between the base of the section and the Precambrian Valley Spring Gneiss.

Table 41. Heavy mineral frequency counts, Morgan Creek section, Burnet County, Texas (counts made by T. R. Walker).

Member	Sample Interval (feet)	Zircon					Tourmaline				
		Total	Clear	Zoned	Dusty	Malacon	Total	Brown	Green	Blue	Black
Welge Sandstone	595-600	12.0	9.7	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0
Lion Mountain Sandstone	558-563	6.3	5.0	0.0	1.3	0.0	0.3	0.0	0.3	0.0	0.0
Cap Mountain Limestone	515-520	10.0	4.7	0.7	4.7	0.0	0.0	0.0	0.0	0.0	0.0
	440-445	7.3	5.0	0.0	2.3	0.0	1.0	0.0	1.0	0.0	0.0
	395-400	13.0	8.7	0.7	3.7	0.0	0.0	0.0	0.0	0.0	0.0
	350-355	20.3	15.3	0.7	4.3	0.0	1.3	0.7	0.7	0.0	0.0
Hickory Sandstone	300-305	9.0	7.3	0.3	1.3	0.0	1.0	0.7	0.0	0.3	0.0
	250-255	13.7	8.7	1.7	3.3	0.0	3.0	1.3	1.7	0.0	0.0
	200-205	7.3	5.0	0.7	1.7	0.0	1.3	0.7	0.7	0.0	0.0
	150-155	17.3	12.0	0.7	4.3	0.3	4.3	2.0	2.3	0.0	0.0
	100-105	47.3	24.3	5.7	17.3	0.0	4.0	1.3	2.7	0.0	0.0
	50-55	30.0	15.0	2.0	13.0	0.0	11.7	7.3	4.0	0.0	0.3
	5-10	29.0	12.7	3.3	11.7	1.3	2.7	2.3	0.3	0.0	0.0

Table 41
(continued)

Member	Sample Interval (feet)	Garnet			Rutile			Other Minerals				
		Total	Colorless	Pink	Total	Amber	Foxy red	Anatase	Altered ilmenite	Leucoxene	Black opaque	Pyrite
Welge Sandstone	595-600	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.3	0.7	42.7	0.3
Lion Mountain Sandstone	558-563	0.3	0.0	0.3	0.3	0.3	0.0	0.0	12.0	0.0	74.3	6.3
Cap Mountain Limestone	515-520	0.0	0.0	0.0	0.3	0.3	0.0	0.3	13.0	0.7	75.7	0.0
	440-445	0.0	0.0	0.0	0.7	0.7	0.0	10.3	13.7	58.0	9.0	0.0
	395-400	0.0	0.0	0.0	0.7	0.7	0.0	11.7	43.3	12.7	18.7	0.0
	350-355	0.7	0.0	0.7	1.0	0.7	0.3	0.0	42.7	1.0	33.0	0.0
Hickory Sandstone	300-305	0.3	0.3	0.0	0.3	0.3	0.0	0.0	72.0	1.0	16.3	0.0
	250-255	1.7	1.3	0.3	1.7	0.7	1.0	2.0	45.0	4.7	28.3	0.0
	200-205	1.3	1.0	0.3	1.0	0.7	0.3	0.0	24.3	1.7	63.0	0.0
	150-155	1.3	0.3	1.0	3.7	1.7	2.0	1.7	34.3	5.0	32.3	0.0
	100-105	1.7	1.3	0.3	3.0	1.3	1.7	16.7	3.0	24.0	1.3	0.0
	50-55	2.0	0.3	1.7	2.7	1.3	1.3	21.7	7.3	23.7	1.0	0.0
	5-10	0.7	0.7	0.0	0.3	0.3	0.0	0.3	43.7	5.0	18.3	0.0

Table 42. Insoluble residue content, Morgan Creek section, Llano County, Texas.

Feet above base	Percent residue	Feet above base	Percent residue	Feet above base	Percent residue
1065-1070	47.4	963-968	10.1	865-870	13.6
1060-1065	18.9	958-963	7.1	860-865	7.8
1055-1060	13.5	953-958	7.5	855-860	20.0
1045-1050	19.3	948-953	6.9	850-855	21.3
1040-1045	10.5	943-948	20.3	845-850	33.9
1035-1040	4.0	938-943	10.5	840-845	23.4
1030-1035	26.9	933-938	8.9	835-840	42.8
1023-1030	10.9	928-933	11.5	730-735	4.7
1018-1023	1.5	923-928	7.7	725-730	4.7
1013-1018	2.3	918-923	3.1	720-725	2.4
1008-1013	0.6	910-918	3.9	715-720	5.5
1003-1008	0.7	905-910	7.5	710-715	3.1
998-1003	0.7	900-905	10.1	705-710	2.6
993-998	4.6	895-900	11.4	700-705	21.4
988-993	0.4	890-895	15.3	695-700	12.2
983-988	20.9	885-890	8.5	690-695	19.1
978-983	3.2	880-885	10.5	685-690	24.7
973-978	5.2	875-880	13.4	680-685	16.0
968-973	6.1	870-875	8.9	675-680	13.1

Table 42 (continued)

Feet above base	Percent residue	Feet above base	Percent residue	Feet above base	Percent residue
670-675	33.4	543-548	20.4	430-435	35.4
665-670	17.2	538-543	4.2	425-430	47.1
660-665	27.1	533-538	8.5	415-419	27.1
655-660	14.9	528-533	47.0	410-415	54.7
650-655	13.1	525-528	34.0	405-410	58.7
645-650	6.2	520-525	43.6	400-405	57.1
640-645	6.2	515-520	53.2	395-400	71.0
635-640	4.5	510-515	10.4	390-395	69.7
630-635	19.1	505-510	22.2	385-390	69.2
625-630	11.5	500-505	13.4	380-385	52.5
620-625	15.9	495-500	11.8	375-380	68.7
615-620	14.0	490-495	22.8	370-375	18.6
610-615	21.2	485-490	18.8	365-370	35.2
605-610	40.8	480-485	12.2	360-365	70.0
600-605	56.2	475-480	11.7	355-360	82.8
595-600	85.6	470-475	24.9	350-355	83.0
588-595	80.2	465-470	54.1	345-350	80.7
583-588	92.2	460-465	33.5	340-345	73.4
578-583	97.3	455-460	54.6	335-340	90.2
573-578	80.2	450-455	27.4	330-335	95.7
568-573	41.9	445-450	9.8	325-330	90.2
563-568	56.2	440-445	65.9	320-325	86.5
558-563	66.6	435-440	68.6	315-320	84.7

Table 42 (continued)

Feet above base	Percent residue	Feet above base	Percent residue	Feet above base	Percent residue
310-315	94.4	185-190	95.3	65-70	99.0
305-310	84.5	175-180	97.8	60-65	98.9
300-305	79.0	170-175	96.6	55-60	100.0
295-300	85.6	165-170	96.4	50-55	100.0
290-295	86.0	160-165	92.1	45-50	100.0
285-290	94.4	155-160	95.5	20-25	98.1
280-285	89.0	150-155	96.8	15-20	97.3
275-280	87.2	145-150	96.6	10-15	99.7
270-275	96.6	140-145	96.7	5-10	100.0
265-270	98.8	135-140	97.0	0-5	98.2
260-265	93.1	130-135	99.1		
255-260	75.9	125-130	94.5		
250-255	78.5	120-125	96.1		
245-250	72.7	115-120	95.1		
240-245	68.2	110-115	91.7		
235-240	70.3	105-110	100.0		
230-235	63.1	100-105	100.0		
225-230	83.4	95-100	98.6		
220-225	94.8	90-95	97.7		
215-220	96.3	85-90	99.8		
200-205	95.6	80-85	97.8		
195-200	95.4	75-80	100.0		
190-195	95.6	70-75	99.6		

Lion Mountain Stratigraphic Section, Burnet County

Lion Mountain, in Burnet County, is the locality from which the Lion Mountain Sandstone received its name. Since the Lion Mountain Sandstone in this section is very poorly exposed, and because of the excellent exposures on Squaw Creek, Mason County, it is proposed that the Squaw Creek section be used as the standard section. The Lion Mountain Sandstone is equally well-exposed on James River, in Mason County, but that section is less accessible.

The top of the Lion Mountain section is at the south end of Lion Mountain at the base of the sandy part of the Morgan Creek Limestone. The base is in a road ditch 300 feet to the southwest (Part 1, Pl. 2, fig. 18).

Wilson collected fossils from the Morgan Creek Limestone continuing the line of section upward from the top of the Welge Sandstone. The following fossil lists have not been updated by Bell:

Fossils collected from 73 feet, Elvinia roemeri (Shumard), Plataspella anatina (Resser), Kindbladia wichitaensis (Resser), and Linnarssonella girtyi Walcott; from 78 feet, Elvinia roemeri (Shumard), Plataspella anatina (Resser), and Linnarssonella girtyi Walcott; from 79 feet, Plataspella anatina (Resser); from 83 feet, Elvinia roemeri (Shumard), Kindbladia wichitaensis (Resser), Plataspella anatina (Resser), Linnarssonella girtyi Walcott, and linguloid; from 87 feet, Plataspella anatina (Resser); from 91 feet, Iddingsia sp., Linnarssonella girtyi Walcott, and linguloid; from 97 feet, Della suada (Walcott), Elvinia roemeri (Shumard), and Irvingella major Ulrich and Resser; from 108 feet, Dokimocephalus? sp., Camaraspis convexa (Whitfield), Elvinia roemeri (Shumard), Pterocephalia sanctisabae Roemer, Linnarssonella girtyi Walcott, linguloids, and spicules (Chancelloria?); from 121 feet, Billingsella coloradoensis (Shumard), Angulotreta microscopica (Shumard), Ceratreta hebes Bell, Pelagiella sp., and pelmatozoan columnals.

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 62 feet described			
Wilberns Formation: 13 feet described			
Welge Sandstone Member: 13 feet thick			
1. Sandstone--medium grained, calcareous, glauconitic, poorly exposed, grains in part secondarily enlarged.	9	9	53-62

Description	Thickness in feet: Interval	Cumulative	Feet above base
2. Sandstone--medium-grained, calcareous, some glauconite, grains poorly sorted, one massive bed.	4	13	49-53
Riley Formation: 49 feet measured Lion Mountain Sandstone Member: 49 feet thick			
3. Greensand and limestone--mostly covered, probably greensand, some limestone float. Fossils collected by Sheppard from 45.5 feet, *Linnarssonella girtyi* Walcott, *Dunderbergia* sp., free cheek, linguloid type A.	9	22	40-49
4. Covered--probably greensand.	4	26	36-40
5. Limestone and greensand--limestone glauconitic, cross-bedded, *Aphelaspis*-bearing; some greensand and covered.	6	32	30-36
6. Limestone--sandy, glauconitic, cross-bedded, numerous *Aphelaspis* and phosphatic brachiopods. Fossils collected by Sheppard from 27 feet, linguloids types A and B, *Aphelaspis walcotti* Resser, and *Cheilocephalus breviloba* (Walcott).	3	35	27-30
7. Limestone and covered--limestone as float cross-beds of *Aphelaspis* coquinite, probably weathering from greensand or shaly sandstone. Fossils collected by Sheppard from 14.5 feet, linguloids, micromitrid, *Aphelaspis walcotti* Resser; from 21.5 feet, *Angulotreta triangularis* Palmer, *Aphelaspis walcotti* Resser, *Pseudagnostus* cf. *P. communis* (Hall and Whitfield), *Homognostus tumidosus* (Hall and Whitfield), *Dytremacephalus laevis* Palmer, *Cheilocephalus breviloba* (Walcott), and linguloid type B; from 25.5 feet,	17	52	10-27

Description	Thickness in feet: Interval	Cumulative	Feet above base
linguloids types A and B, Aphelaspis walcotti Resser, Cheilocephalus breviloba(Walcott), and undet. trilobite.			
8. Covered--forms a bench.	5	57	5-10
Fossils collected by Sheppard from 8 feet, Aphelaspis walcotti Resser; from 8.5 feet, Aphelaspis walcotti Resser, Dictyonina perforata Palmer, Angulotreta triangularis Palmer, ceratretoid?, and bone?; from 9 feet, Angulotreta triangularis Palmer, pelmatozoan columnals, Aphelaspis walcotti Resser, Cheilocephalus breviloba (Walcott); from 9.5 feet, Aphelaspis walcotti Resser.			
9. Limestone and covered--limestone bedded, covered portion probably greensand or shaly sandstone.	5	62	0-5
Fossils collected by Sheppard from 0 feet, Aphelaspis walcotti Resser, Cheilocephalus breviloba (Walcott), and linguloid (Dicellomus? sp.); from 3 feet, Aphelaspis walcotti Resser, Alphelaspis spinosa Palmer, Cheilocephalus breviloba (Walcott), Glaphyraspis ornata (Lochman), acrotretoid, bone?, linguloids types A and B, spicule, and micromitrid.			

Backbone Mountain--Sudduth Area, Burnet County

Backbone Mountain Stratigraphic Section

The Backbone Mountain section, measured and described by Barnes and L. E. Warren in January 1945 (Cloud and Barnes, 1948), includes 275 feet of Moore Hollow Group rocks. The description of these rocks and of the overlying Tanyard Formation are reprinted here because the Cloud-Barnes Ellenburger volume is out-of-print. An estimated 100 feet of upper Tanyard rocks have been faulted out.

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Ellenburger Group: 422 feet measured			
Tanyard Formation: 472 feet measured			
Staendebach Member: 381 feet measured			
Dolomitic facies: 381 feet measured			
139. Dolomite--coarse grained, pinkish gray to purplish red, massively bedded with 1 foot or more between bedding joints. In part weathers with cavernous surface and is vuggy within.	25	910	722-747
Chert chalcedonic to subchalcedonic, in part highly oolitic, weathers red, occurs as nodules and masses of various shapes, very abundant.			
140. Dolomite--coarse grained, and the same as in interval 139.	19	929	703-722
141. Dolomite--coarse grained, and the same as in interval 139.	3	932	700-703
Chert semiporcelaneous, oolitic, common as nodular plates.			
142. Dolomite--coarse grained, and the same as in interval 139.	17	949	683-700

	Description	Thickness in feet: Interval	Cumulative	Feet above base
143.	Dolomite--coarse grained as in interval 139, with some medium grained. Chert quartzose and in part porcelaneous, large dolomolds are present, in part oolitic, common in masses of angular fractured fragments occupying areas 6 inches by several feet in size. Silicified fossils from float are probably from this interval and are brevicone cephalopods (27T-9-46E).	28	977	655-683
144.	Dolomite--medium grained, medium gray to pinkish gray, beds 6 to 18 inches thick. Chert porcelaneous, nodules up to 3 inches in size, widely scattered throughout interval.	30	1,007	625-655
145.	Dolomite--medium grained, brownish gray. Chert subchalcedonic, somewhat oolitic, occurring as irregular clusters of small pieces.	1	1,008	624-625
146.	Dolomite--medium grained, medium gray with a pinkish tint, beds poorly defined 6 to 18 inches thick. Chert porcelaneous and very rare.	32	1,040	592-624
147.	Dolomite--medium grained, medium gray to beige, two beds. Chert porcelaneous and quartzose in fragmented masses.	2	1,042	590-592
148.	Dolomite--medium grained, brownish gray.	7	1,049	583-590

	Description	Thickness in feet: Interval	Cumulative	Feet above base
149.	Dolomite--medium grained, beige to medium gray with some brownish gray. Chert porcelaneous to subchalcedonic, occurring as nodules up to 2 inches in size.	15	1,064	568-583
150.	Dolomite--medium grained, beige to medium gray, beds 2 feet or more thick. Chert porcelaneous, dolomoldic with wide variation from almost interstitial to nearly compact, occurs as masses up to 2 feet thick.	9	1,073	559-568
151.	Dolomite--medium grained, medium gray to beige with bedding faintly visible between bedding joints. Chert porcelaneous to subchalcedonic; a small amount which is quartzose occurs as thin plates along the bedding.	17	1,090	542-559
152.	Dolomite--medium grained with some approaching coarse grained, medium gray, in part brownish and pinkish tinted, bedding joints not well developed but appear to range from about 6 inches to 2 feet apart.	21	1,111	521-542
153.	Dolomite--medium grained, medium gray, in part brownish and pinkish tinted, beds not well developed, but probably ranging from about 6 inches to 2 feet thick. Chert porcelaneous with very small amount subchalcedonic, structureless except for a few dolomolds, occurs abundantly as irregular to rounded masses up to 6 inches in size, and as ½-inch thick brecciated appearing stringers.	21	1,132	500-521

	Description	Thickness in feet: Interval	Cumulative	Feet above base
154.	Dolomite--predominantly medium grained, with some fine-grained beds which appear in large part to grade laterally into medium grained, medium gray in part brownish and pinkish tinted, beds not well developed but appear to range between about 6 inches and 2 feet in thickness. Chert porcelaneous and in minor part subchalcedonic and dolomoldic. It is abundant as irregular to rounded masses not over 6 inches in diameter, and as irregularly fractured layers about one-half inch thick.	51	1,183	449-500
155.	Dolomite--medium to fine grained, medium gray with a pinkish tone, bedding not well-exposed. Chert porcelaneous, white and highly dolomoldic, very abundant as lacy clusters and as bedding plane layers. In addition and also very abundant is a porcelaneous, in part concretionary chert, occurring in masses up to 1 foot thick.	27	1,210	422-449
Cross fence at 445 feet in section.				
156.	Dolomite--medium grained, medium gray with a pinkish tone. Chert porcelaneous, white and highly dolomoldic, very abundant as lacy clusters and bedding plane layers.	22	1,232	400-422
157.	Dolomite--medium grained with some coarse-grained near top.	8	1,240	392-400
158.	Dolomite--medium grained with small amount of fine grained, medium gray with a pinkish tone, not well exposed, beds appear to range between 6 and 18 inches in thickness.	19	1,259	373-392

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Chert porcelaneous, white and highly dolomoldic, very abundant as lacy clusters up to several feet thick throughout interval. A few masses of stromatolitic(?) chert occur near the top of the interval and some hand-sized pieces of porcelaneous, oolitic chert are present.			
159.	Dolomite--medium grained, medium brownish gray to medium and light gray, beds about 1 foot thick.	7	1,266	366-373
	Chert porcelaneous, micro-oolitic, abundant as masses 4 to 5 inches in size, and in bottom foot of interval jointed.			
	Threadgill Member: 91 feet thick			
	Dolomitic facies: 91 feet thick			
160.	Dolomite--coarse grained, almost white to light gray, with some beds a medium gray with a brownish tint. The beds very indistinct with bedding joints widely spaced and irregular.	36	1,302	330-366
Cross fence at 350 feet in section.				
161.	Dolomite--coarse grained, and same as in interval 160.	5	1,307	325-330
	Chert minutely quartzose to semi-porcelaneous, compact, smoky on fresh fractures, weathers white, occurs mostly as one-half inch isolated angular fragments.			
162.	Dolomite--coarse grained and the same as in interval 160.	4	1,311	321-325
163.	Dolomite--coarse grained and the same as in interval 160.	2	1,313	319-321
	Chert minutely quartzose to semi-porcelaneous, compact, smoky on fresh			

Description	Thickness in feet: Interval	Cumulative	Feet above base
fractures, weathers white, occurs as a network in relief on the dolomite. Fossils probably from this interval collected 2,100 feet to the southeast are Sinuopea sp., Ozarkina sp., Ophileta sp., and brevicone cephalopods (27T-9-46A).			
164. Dolomite--coarse grained, and the same as in interval 160. An unctuous green material is sparingly present between dolomite rhombs.	44	1,357	275-319
SHIFT along Tanyard-Pedernales contact south-southwest 1,300 feet to fence and continue section down hill to the west.			
Moore Hollow Group: 275 feet measured Wilberns Formation: 275 feet measured San Saba Member: 272 feet thick Dolomitic facies: 224 feet thick			
165. Dolomite--fine grained, beige to deep rose, well-bedded, beds from 3 to 12 inches thick. A coarse-grained bed at 268 to 270 feet in section pinches out laterally. Chert at the top along the strike is mostly finely granular to quartzose, dark olive-brown to black, weathers to a jasper-red, occurs as fist-sized to 2-foot masses. In the bottom 2 feet the dolomite contains some quartzose films. Silicified fossils collected from white chert at the top of the interval 500 feet east of the fence are Schizopea sp. and a high spired gastropod of uncertain relationships (27T-9-56A). (These could be Ordovician in age.)	18	1,375	257-275

	Description	Thickness in feet: Interval	Cumulative	Feet above base
166.	Dolomite--fine grained with some approaching medium grained, color varies from bed to bed in shades of brown and greenish-grays, mostly mottled with some beds of fairly even tone. Bedding indistinct with an indication that beds may be 2 feet or more thick. Chert quartzose to semiporcelaneous, dolomoldic, with dolomolds being perfect in more solid fragments and poorly defined in lacy portions, occurs as a lacy network which weathers in relief. Silicified fossils at bottom of this interval collected 100 feet east of the fence are small high spired gastropod and Finkelnburgia sp. (27T-9-56B).	16	1,391	241-257
167.	Dolomite--fine grained, colored as in interval 166, beds 6 to 12 inches thick. Chert present but very scarce.	10	1,401	231-241
168.	Dolomite--fine grained, colored as in interval 166, beds 1 foot thick. Chert quartzose to semiporcelaneous, dolomoldic, with dolomolds being perfect in more solid fragments and poorly defined in lacy portions, occurs as a network in top and bottom foot of interval.	4	1,405	227-231
169.	Dolomite--fine grained, colored as in interval 166, beds 1 to 1.5 feet thick.	16	1,421	211-227
170.	Dolomite--fine grained with a few medium-grained beds, colors as in interval 166, beds 3 to 9 inches thick.	29	1,450	182-211

Description	Thickness in feet Interval	Cumulative	Feet above base
171. Dolomite--medium grained, nutria and medium greenish gray, bedding joints indistinct but appear to be 1 foot or more apart, weathers with a cavernous irregular surface.	5	1,455	177-182
172. Dolomite--fine grained with a few beds in the upper part approaching medium-grained, colored as in interval 166, beds mostly 6 to 12 inches in thickness, weathers smooth.	39	1,494	138-177
173. Dolomite--fine grained, colored as in interval 166, some beds contain stylolites with bright yellow material along them.	29	1,523	109-138
Section crosses drain at 138 feet in section.			
174. Dolomite--very fine grained, brownish gray with an olive cast and only slightly mottled.	1	1,524	108-109
Partially silicified girvanellas are present.			
SHIFT south about 250 feet along bed containing partially silicified girvanellas, continue section down hill to the west.			
175. Dolomite--very fine grained, brownish gray with an olive cast and only slightly mottled, bedding joints fairly distinct 6 inches to 3 feet apart, some breccia present.	21	1,545	87-108
Calcite girvanellas(?) seen on fresh breaks.			
176. Dolomite--very fine grained to microgranular, mottled, beige and dark greenish-gray, bedding joints fairly distinct and 6 inches to 2 feet apart.	7	1,552	80-87
Calcite girvanellas(?) seen on fresh breaks.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
177. Dolomite--very fine grained to microgranular, mottled brownish gray and dark greenish gray, very massive with indistinct bedding joints 2 to 6 feet apart.	20	1,572	60-80
178. Dolomite--very fine grained to microgranular, mottled nutria to cinnamon-brown or darker with dark greenish gray splotches, essentially one massive bed.	6	1,578	54-60
179. Dolomite and limestone intergradation--essentially one bed, with the dolomite very fine grained, mottled cinnamon to nutria with dark greenish gray splotches.	3	1,581	51-54
SHIFT around hill south-southeast about 400 feet on bed containing small silicified brachiopods, continue section down hill to the southwest. (Note that the bottom of the dolomite fluctuated vertically through an interval of about 20 feet.)			
Calcitic facies: 48 feet thick			
180. Limestone--aphanitic, brownish gray, with network of lighter brownish gray fine grained dolomite which weathers to a dirty brown on a background of medium gray. Beds 1.5 to 2 feet thick with one 4-inch oolite bed at 48 feet in section. Silicified brachiopods located on top surface of interval are poorly preserved *Finkelnburgia* sp. (27T-9-56C).	6.5	1,587.5	44.5-51
181. Limestone--granular, glauconitic, brownish gray, one bed, contains partially silicified girvanellas. Calcitic fossils present are trilobites.	1.5	1,589	43-44.5

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	The lower portion of the calcitic facies of the San Saba Member in this section is an alternation of limestone beds and thinly bedded zones of argillaceous limestone and has characteristics which run throughout the portion measured. The thin-bedded intervals are poorly exposed in the line of section, but in the drain to the east of the section they are mostly exposed and are irregularly bedded, giving a nodular appearance. All of the intervals described are slightly glauconitic and the limestone ranges in texture from perhaps aphanitic or microgranular to coarse-grained. The coarse-grained portions form a network when present. The colors are chiefly beige to greenish-gray for the very thin bedded rocks ranging to brownish-gray for the thicker bedded ones. The descriptions of the following intervals are abbreviated, stating only the variations from the normal characteristics.			
182.	Limestone--thinly bedded, some dolomite rhombs present.	5	1,594	38-43
183.	Limestone--fine-grained, beige to medium-gray, beds 1 to 6 inches thick.	1.5	1,595.5	36.5-38
184.	Limestone--thinly bedded.	2	1,597.5	34.5-36.5
185.	Limestone--oolitic, medium brownish-gray, one bed.	0.5	1,598	34-34.5
186.	Limestone--thinly bedded.	6	1,604	28-34
187.	Limestone--beds 1 to 4 inches thick, some sponge spicules present on weathered surfaces.	5	1,609	23-28
188.	Limestone--thinly bedded.	8.5	1,617.5	14.5-23
189.	Limestone--one bed.	0.5	1,618	14-14.5

	Description	Thickness in feet Interval	Cumulative	Feet above base
190.	Limestone--thinly bedded.	2	1,620	12-14
191.	Limestone--two beds.	1	1,621	11-12
192.	Limestone--thinly bedded with a few 3- to 4-inch limestone beds containing dark cinnamon-brown network of coarse-grained calcite.	5	1,626	6-11
193.	Limestone--irregular beds 1 to 8 inches thick.	3	1,629	3-6
	Point Peak Member: 3 feet measured			
194.	Shale--not exposed in line of section.	3	1,632	0-3

The bottom of the section is at the top of a 6-inch, granular, brownish-gray limestone bed, which contains numerous rounded intraclasts, trilobite fragments, glauconite, and a silicified species of alate Billingsella on the top surface. Plectotrophia was not found in the line of section but to the southeast one-half mile they are abundant in this bed (27T-9-56D). The bottom of the described section is about 4,900 feet east-southeast of the intersection of Ranch Road 2342 with Ranch Road 1431 and is shown in Part 1, Pl. 7, fig. 19.

Fossils from Hoover Point Stratigraphic Section

The following note by Bell, June 26, 1967, concerns collections made by Sheppard on Hoover Point of Backbone Ridge: "B-241. Unfossiliferous, brown-stained, essentially non-glauconitic, calcitic sandstone, considerable limonite, possibly derived from glauconite. This is either weathered Lion Mountain or Welge; if the latter, the footages for Sheppard's collections are at least 5 feet low." This conclusion that the footages are low by about 5 feet is correct.

Cloud and Barnes (1948) gave thicknesses of 200 and 36 feet for the Cap Mountain Limestone and Lion Mountain Sandstone respectively in the Hoover Point section. For his footage designations Sheppard probably used the 200 foot value for the top of the Cap Mountain Limestone, but because the contact is in the gradational sequence, chose a different level for the top of this member.

Sheppard's collections were checked June 2, 1969 by Bell and are listed as follows:

Fossils collected from 202.5 feet, linguloid type A, Angulotreta triangularis Palmer, and Listroa longifrons (Palmer); from 208 feet, linguloid type B, Angulotreta triangularis Palmer, Listroa longifrons (Palmer), (?)Taenora platifrons (Palmer), and Apehlaspis sp. (pygidium); from 208.5 feet, linguloid type B, Angulotreta triangularis Palmer, and aphelaspid; from 209.5 feet, linguloid type B, Angulotreta triangularis Palmer, Homagnostus tumidosus (Hall and Whitfield), Dicanthopyge cf. D. reductus Palmer, Dytremacephalus sp., and (?)Taenora platifrons (Palmer); from 212 feet, linguloids types A and B, Angulotreta triangularis Palmer, aphelaspids, and Dytremacephalus sp.; from 215 feet, linguloid type B, Angulotreta triangularis Palmer, aphelaspid, Dytremacephalus sp., and (?)Taenora platifrons (Palmer); from 216.5 feet, linguloid type B, Angulotreta triangularis Palmer, and aphelaspid; from 219.5 feet, linguloid type B, Aphelaspis conveximarginatus (Palmer), aphelaspid, Dunderbergia sp., and unidentified pygidium; from 221.5 feet, linguloids types A and B, Aphelaspis conveximarginatus (Palmer), Dunderbergia sp., and (?)Taenora platifrons (Palmer); from 222 feet, linguloids types A and B, and Aphelaspis conveximarginatus (Palmer); from 225 feet, linguloid type B, aphelaspid, and (?)Taenora platifrons (Palmer); from 228 feet, linguloid type B, Angulotreta triangularis Palmer, aphelaspid, and Homagnostus sp.; from 229 feet, linguloids types A and B, Angulotreta triangularis Palmer, aphelaspids, and (?)Taenora platifrons (Palmer); from 231.5 feet, linguloid type B, and aphelaspids (cf. Listroa longifrons (Palmer)); from 234 feet, linguloid type B and Dytremacephalus sp.; from 236 feet, linguloid type A, Apsotreta expansa Palmer, Dunderbergia variagranula Palmer, Dytremacephalus granulosus Palmer, and (?)Sigmocheilus sigmoidalis (Palmer).

The following lists of fossils, updated by Bell during June 1969, are from collections made by Wilson and Ellinwood:

Fossils collected by Wilson from 249.5 feet, Elvinia roemeri (Shumard), indeter. trilobite (dunderbergid?), and linguloid frags.; from 298 feet, Linnarssonella girtyi Walcott; from 300 feet, Linnarssonella girtyi Walcott and linguloid frag.; from 308 feet, Linnarssonella girtyi Walcott, Camaraspis convexa (Whitfield), Dellea suada (Walcott), Elvinia roemeri (Shumard), Pterocephalia sanctisabae Roemer, and linguloid type A.

Fossils collected by Ellinwood from 310.5 feet, Irvingella major Ulrich and Resser; from 311.5 feet, Angulotreta microscopica (Shumard).

Fossils collected by Wilson from 312 feet, Angulotreta microscopica (Shumard), Angulotreta sp., Eoorthis remnicha (Winchell), Eoorthis indianola (Walcott), and Parabolinoides granulosus Ellinwood.

Fossils collected by Ellinwood from 312 feet, Angulotreta microscopica (Shumard), aff. var. digitalis Bell, Billingsella coloradoensis (Shumard), Eoorthis remnicha (Winchell), Eoorthis indianola (Walcott), Comanchia amplooculata (Frederickson), Parabolinoides granulosus Ellinwood, and Parabolinoides contractus Frederickson; from 312.5 feet, Angulotreta microscopica (Shumard), Billingsella coloradoensis (Shumard), Parabolinoides contractus Frederickson, Parabolinoides granulosus Ellinwood, and pygidium; from 315.5 feet, Pseudodicellomus mosaicus (Bell), Angulotreta microscopica (Shumard), Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), and Taenicephalus gouldi (Frederickson).

Fossils collected by Wilson from 316 feet, Pseudodicellomus mosaicus (Bell), Angulotreta microscopica (Shumard), Billingsella coloradoensis (Shumard), Conaspis leptoholcus Longacre, Orygmaspis llanoensis (Walcott), Taenicephalus gouldi (Frederickson), and Pelagiella sp.

Fossils collected by Ellinwood from 317 feet, Billingsella aff. B. texana Bell, and Wilbernia halli Resser, var. A Ellinwood; from 318 feet, Pseudodicellomus mosaicus (Bell) and Angulotreta microscopica (Shumard); from 320.5 feet, Billingsella aff. B. texana Bell, Huenella abnormis (Walcott), and fragments of Pseudodicellomus and Angulotreta; from 323 feet, Taenicephalus shumardi (Hall), and Wilbernia halli Resser; from 328.5 feet, Billingsella texana Bell and Taenicephalus shumardi (Hall); from 330 feet, Pseudodicellomus mosaicus (Bell), Angulotreta sp., Billingsella texana Bell, and Taenicephalus shumardi (Hall); from 346.5 feet, Saratogia americana (Lochman and Hu) and Wilbernia diademata (Hall); from 347.5 feet, Saratogia americana (Lochman and Hu); from 357.5 feet, Billingsella texana Bell, Drumaspis texana Resser, and Sinuella minuta Knight; from 364.5 feet, Drumaspis texana Resser, Saratogia fria Lochman and Hu, and Wilbernia pero (Walcott); from 377.5 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, Saratogia fria Lochman and Hu, Saratogia modesta (Lochman and Hu), Sinuella minuta Knight, and pelmatozoan spined columnal; from 566.5 and 583.5 feet, Plectotrophia sp.

Fossils from Sudduth Stratigraphic Section

Bell's notes concerning the collections in the Sudduth section follow: "The base of the section is placed at the base of the Wilberns Formation, and footages of Wollman's, Wilson's, and Ellinwood's collections are reconciled to that base. The thickness of the Welge Sandstone and of the interval to the Irvingella bed was verified on July 6, 1967. The thickness of 12 feet for the Welge is acceptable; the base is at an aluminum gate on the west side of U.S. Highway 281 at a point 6.0 miles north of intersection of U.S. Highway 281 with Ranch Road 1431 on north edge of Marble Falls, and 0.7 mile north of railroad crossing. The thickness of 43 feet of Morgan Creek Limestone with Irvingella coquina at top is acceptable for this interval. The adjusted values for Wollman's collections become SU-2 for the Welge, SU-55 for the Irvingella bed, and SU-56 for the Eoorthis Bed."

A geologic map of the Sudduth area is shown in Part 1, Pl. 2, fig. 20.

The fossil lists updated by Bell during July 1969 follow:

Fossils collected by Wilson from 2 feet, Dunderbergia sp., Elvinia aff. E. granulata Resser, Pseudosaratogia aff. P. magna Wilson, and Pterocephalia sp.

Fossils collected by Wollman from 2 feet, Camaraspis convexa (Whitfield), Dunderbergia sp., Elvinia roemeri (Shumard), Iddingsia aff. I. robusta (Walcott), and Pterocephalia sanctisabae Roemer.

Fossils collected by Wilson from 35 feet, Linnarssonella girtyi Walcott, Elvinia roemeri (Shumard), Iddingsia robusta (Walcott), and Kindbladia wichitaensis (Resser); from 46 feet, Linnarssonella girtyi Walcott, Dellea suada (Walcott), Dokimocephalus intermedius (Resser), Dunderbergia aff. D. nitida (Hall and Whitfield), Dunderbergia variagranula Palmer, Elvinia roemeri (Shumard), Morosa? bothra Stitt, Pterocephalia sanctisabae Roemer, and Ocnerorthis sp.; from 48 feet, Linnarssonella girtyi Walcott, Camaraspis convexa (Whitfield), Dellea saratogensis (Resser), Dokimocephalus sp., Elvinia roemeri (Shumard), and linguloid fragments; from 55 feet, Comanchia amplooculata (Frederickson), Linnarssonella girtyi Walcott, Irvingella major Ulrich and Resser, Sulcocephalus candidus (Resser), linguloid type B, and Angulotreta sp.

Fossils collected by Ellinwood from 55 feet, Comanchia amplooculata (Frederickson), Irvingella major Ulrich and Resser, Sulcocephalus candidus (Resser), linguloid type B, and Angulotreta sp.

Fossils collected by Bell from 55 feet, Comanchia amplooculata (Frederickson), Irvingella major Ulrich and Resser, and Sulcocephalus candidus (Resser).

Fossils collected by Ellinwood from 56 feet, Angulotreta microscopica (Shumard), Angulotreta microscopica digitalis Bell, Ceratreta hebes Bell, Billingsella coloradoensis (Shumard), Eoorthis remnicha (Winchell), Parabolinoides contractus Frederickson, Parabolinoides granulosus Ellinwood, and Pelagiella sp.

Fossils collected by Wilson from 56.5 feet, Angulotreta microscopica (Shumard), Ceratreta hebes Bell, Billingsella coloradoensis (Shumard), Parabolinoides contractus Frederickson.

Fossils collected by Ellinwood from 58 feet, Angulotreta microscopica (Shumard), Ceratreta hebes Bell, Billingsella coloradoensis (Shumard), Parabolinoides contractus Frederickson, and linguloid; from 60 feet, Angulotreta microscopica (Shumard), Ceratreta hebes Bell, Pseudodicellomus mosaicus (Bell), Billingsella aff. B. texana Bell, Orygmaspis llanoensis (Walcott), Wilbernia halli Resser, var. A Ellinwood, linguloid, and Pelagiella sp.; from 61 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella coloradoensis (Shumard), Billingsella aff. texana Bell, Huenella abnormis (Walcott), Conaspis leptoholcus Longacre, Orygmaspis llanoensis (Walcott), Taenicephalus gouldi (Frederickson), and Wilbernia halli Resser, var. A Ellinwood; from 66 feet, Taenicephalus shumardi (Hall); from 116 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, Ptychaspis bullasa Lochman and Hu, Saratogia americana (Lochman and Hu), Saratogia fria Lochman and Hu, Wilbernia pero (Walcott), Sinuella minuta Knight, and Pelagiella sp.

Cap Mountain--Riley Mountains Area, Llano County

The Warren Springs, Moore Hollow, and East Canyon sections include all of the Ellenburger, Wilberns, and Riley rocks of the Riley Mountains. The Warren Springs section and the upper part of the Moore Hollow section include the Ellenburger Group. The lower part of the Moore Hollow section is of the upper part of the Wilberns Formation.

The East Canyon section is the type section of the Riley Formation (Bridge, Barnes, and Cloud, 1947), and in addition includes the lower part of the Wilberns Formation. Bell in 1954 remeasured, marked off in 5-foot intervals, and described the East Canyon section. Harry Nicholls, aided by Elbert A. King, Jr., made fossil collections from it about 1956.

Moore Hollow Stratigraphic Section

Thicknesses of units in the Moore Hollow section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Ellenburger Group (633 feet measured)		
Gorman Formation	30+	935-965
Tanyard Formation (603 feet)		
Staendebach Member	353	582-935
Threadgill Member	250	332-582
Moore Hollow Group (332 feet measured)		
Wilberns Formation (332 feet measured)		
San Saba Member (217 feet)		
Dolomitic facies	73	259-332
Calcitic facies	144	115-259
Point Peak Member	115+	0-115

Cloud's (Cloud and Barnes, 1948) description of the Moore Hollow section below the Staendebach Member of the Tanyard Formation is integrated with description by Barnes of spot samples collected by Bell in 1954 and of thin sections made from the spot samples. Insoluble residues prepared by Hendricks (1952) are described by Barnes following the section description. A geologic map in the vicinity of the Moore Hollow section is shown in Part 1, Pl. 7, fig. 23.

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Ellenburger Group: 250 feet described			
Tanyard Formation: 250 feet described			
Threadgill Member: 250 feet thick			
Upper dolomitic facies: 96 feet thick			
19. Dolomite--mostly medium-grained, in part grading to fine-grained, locally vuggy; woodash-gray to pearl-gray, grading to light pinkish- or light brownish-gray with pinkish and purplish tinges and streaks. Beds generally not well-exposed and bedding indistinct, but no bed appears to exceed 24 inches in thickness. Weathers to irregular, generally poorly exposed, knobby, in part pitted, medium- to rather dark-gray ledges.	32	415	550-582
Siliceous elements in the lower 7 feet consist of fairly abundant irregular excrescences of fine- to medium-grained quartz druse and scattered angular inclusions of semichalcedonic, light bluish-white, white-weathering chert with scattered to fairly abundant small dolomolds. Interstitial chert is fairly abundant in some beds. Chert is also very abundant as float over the surface of interval 19 and the upper 15 feet of interval 20. Some of this float is probably derived by weathering from interval 19, but the probability is that much of it has floated down from beds of the Staendebach Member above. This chert float shows considerable variation; ranging from orange-stained, conspicuously cellular, dolomoldic chert through a siliceous rock that consists of irregularly interlaced quartz druse and white, smooth-fracturing, dolomoldic chert to a white subporcelaneous to porcelaneous, in part, quartzose chert, with scattered but fairly abundant dolomolds or even to a subgranular, bluish-white chert or a dolomoldic chert that is chalk-white and almost chalk textured.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils were collected from chert float through interval 19 and about the upper 10 feet of interval 20. They are probably derived in part from interval 19 and in part from the beds of the Staendebach Member above. Fossils collected were species of Ophileta, Ozarkina, "Ozarkispira," "Pelagiella," Schizopea, Sinuopea, Gasconadia, Ectenoceras and other cephalopods, chiton plates, and cystid plates (TF-371).			
20. Dolomite, in very minor part slightly calcitic--mostly medium-grained, grading to coarse-and fine-grained, in part vuggy and especially so in the upper 15 feet; woodash-gray to pearl-gray, brownish-gray, light pinkish to purplish tinges and with yellow to buff coatings in the vuggy parts. Bedding indistinct, generally massive, with no recognizable bedding surfaces in intervals up to 5 and 6 feet thick. Weathers to irregular, somewhat hummocky, generally massive, in part pitted, rather dark-gray to iron-gray ledges.	64	479	486-550
Chert was noted as scattered, irregular inclusions and excrescences at 488, 503, and 512 to 515 feet; but it is generally scarce in place in interval 20. It is subgranular to semichalcedonic, in part with scattered dolomolds or dolomite rhombs, medium bluish-to brownish-gray to dull-white, and weathers dull to moderately shiny white to dull brown. Siliceous residues show minor finely disseminated silica in the interval, and although it all seems to be crystalline there is a possibility that some is very fine silt.			
Gasconadia and Ectenoceras were seen in chert float in the upper third of interval 20, but they were			

Description	Thickness in feet: Interval	Cumulative	Feet above base
probably derived from interval 19 or even higher beds.			
Base of upper dolomitic facies of Threadgill Member of Tanyard Formation at base of interval 20 (altitude approximately 1,470 feet). Thickness of upper dolomitic facies 96 feet.			
Calcitic facies: 76 feet thick			
21. Limestone, grading laterally to dolomite in the bottom and top few feet and with minor irregular inclusions and occasional pockets of calcitic dolomite and dolomitic limestone throughout--predominantly aphanitic, grading in part to a fine to coarse pellet limestone, medium-to coarse-grained in the dolomitic portions. Woodash-gray to pearl-gray, with pinkish and greenish tinges and occasional irregular, greenish, argillaceous films. Beds from fraction of an inch to 36 inches thick, generally fairly massive and indistinctly bedded. Weathers to massive, irregular, somewhat hummocky ledges alternating with benches that are strewn with subrounded to subangular cobble-sized rubble; the weathered color being medium-to light bluish-gray, with local patches that are almost white, and with darker brownish-gray irregularly raised streaks and patches where dolomitic.	76	555	410-486
Minor chert occurs at 428 and 467 feet as irregular excrescences that are partly semichalcedonic, with a fracture resembling that of freshly broken paraffin, in part subgranular, locally crypto-oolitic or containing cloudy pelletlike bodies, with local quartzose patches, rather dark-to purplish-gray, and weather dull-brown.			
Except as they are affected by the chert noted, siliceous residues are			

Description	Thickness in feet: Interval	Cumulative	Feet above base
virtually nonexistent from interval 21, but minor waxy-lustered greenish argillaceous flakes do occur.			
Unidentifiable cross sections of gastropods were seen from 458 to 464 feet, among which there are a few impressions of a robust few-whorled gastropod suggesting Sinuopea. A chertified object that suggests Ozarkina but is probably inorganic was collected at 482 feet (TF-370).			
Hand sampled at 425, 445, and 475 feet. At 425 feet, limestone, aphanitic; yellowish-gray, slightly mottled and clouded very light greenish gray; a few small areas of clear calcite; some patches of coarse-grained, very light gray dolomite. At 445 feet, limestone, aphanitic; very light gray to yellowish gray, some yellowish-orange along numerous stylolites; a few tiny areas and thin veins of clear calcite. At 475 feet, limestone, aphanitic; yellowish-gray; coarse-grained dolomite mottles, light-gray with a pinkish cast; stylolites numerous, some very light gray clay and flecks of hematite along them; two gastropods, one resembles Sinuopea.			
Thin sectioned at 425, 445, and 475 feet. At 425 feet, limestone, aphanitic pellets and intraclasts mostly closely packed in a broken network of microgranular, clear calcite; a few small areas of clear calcite radial toward center probably fill voids, a 2-mm calcite crystal has numerous, variously oriented, very fine grained calcite crystals within it. At 445 feet, limestone, numerous aphanitic pellets, intraclasts, and beds in a minor amount of microgranular matrix; small, irregular voids(?) filled by very fine to coarse-grained, clear calcite; very			

Description	Thickness in feet: Interval	Cumulative	Feet above base
little clay in part limonitic along numerous stylolites. At 475 feet, mostly limestone, numerous aphanitic intraclasts and pellets(?) and a few microgranular intraclasts in a small amount of microgranular, fairly clear calcite; a few areas of coarser, clear calcite may fill small vugs; an area of coarse-grained, replacement dolomite demonstrates clearly that dolomitization was later than veining, as well as the character of dolomitization along a front (Pl. 15, figs. 4,5). Much undigested calcite is in the dolomite near the front especially where a vein is enveloped. The dolomite is mostly equidimensional except along the irregular front; some grains are thin parallel to the front, indicating that the crystals start to grow at one side and continue to grow until they became equidimensional unless arrested. Stylolites truncate intraclasts, cut veins, and have a small amount of clay along them, but their age relationship to the dolomitization could not be determined.			
Base of calcitic facies of Threadgill Member of Tanyard Formation at base of interval 21 (altitude approximately 1,430 feet). Thickness of calcitic facies 76 feet.			
<u>Lower dolomitic facies: 78 feet thick</u>			
22. Dolomite, slightly calcitic in upper few feet--coarse-to medium-grained, vuggy; woodash-gray to almost white, in part with pinkish and yellowish tinges and scattered purplish specks; bedding indistinct. Weathers to rough, generally pitted, hummocky, generally medium-gray surfaces. The weathered expression suggests a massive, nonbedded rock and recognizable bedding surfaces are scarce if not entirely absent.	78	633	332-410
Siliceous residues from this interval are extremely minor in quantity and consist			

Description	Thickness in feet: Interval	Cumulative	Feet above base
primarily of individual or clustered very small siliceous grains of a crystalline appearance and minor waxy-looking greenish argillaceous flakes.			
Hand sample at 340 feet. Dolomite coarse-grained, very light gray, a few yellowish-gray and light-gray mottles; slightly vuggy.			
Thin sectioned at 340 feet. Dolomite, coarse-grained, composite (Pl. 15, fig. 3); slightly darker, pebble-size areas traversed by irregular, bleached streaks were dolomitized as a whole with the dolomite crystallizing indiscriminately across all boundaries; post-dolomitization fracturing and shearing render an interpretation somewhat uncertain but it appears that intraclasts may have been cemented by calcite, the whole fractured, filled by clear calcite, and the whole dolomitized.			
Base of lower dolomitic facies of Threadgill Member of Tanyard Formation and Cambrian-Ordovician boundary at base of interval 22 (altitude approximately 1,385 feet). Thickness of lower dolomitic facies 78 feet, of member 250 feet and of formation 603 feet.			
Moore Hollow Group: 332 feet described			
Wilberns Formation: 332 feet described			
San Saba Member: 217 feet thick			
Dolomitic facies: 73 feet thick			
23. Dolomite, calcitic in the lower 3 feet and slightly calcitic in a few other beds--mostly very fine grained to microgranular. Yellowish-to brownish-gray, olive-gray, or rose-gray, grading to dull-rose or lavender, with pinkish and rose tones being most common in the lower 5 feet; in part irregularly mottled and streaked with tones of pinkish-and brownish-gray. A 2-inch	73	706	259-332

Description	Thickness in feet: Interval	Cumulative	Feet above base
band of very finely color-laminated dolomite was noted at about 329 feet, a little east of the line of section. Bedding generally indistinct; beds measuring 3 to 14 inches thick were observed, but with more massive-looking, indistinctly bedded ledges commonly extending to a vertical thickness equivalent to 3 or 4 feet of section without clear indications of bedding surfaces. Weathers to uneven, hackly, indistinctly bedded, medium-gray to brownish-gray surfaces.			
Chert is fairly common in place and as float from 298 to 315 feet. That in place occurs as excrescences and plates that are subporcelaneous to subgranular or chalk textured, in part very finely dolomoldic, in part finely drusy, bone-white, to yellowish, and weather rough and dirty-white. The chert float occurs as large blocks that are more generally chalk textured, very finely dolomoldic, and in part drusy.			
Scattered interstitial and possibly globular glauconite was seen at 263 and 322 feet. Interstitial glauconite was also seen about 800 feet west of the line of section, on the next spur west and immediately below the Ellenburger-Moore Hollow boundary.			
Finkelnburgia sp. was collected from dolomite at 263 feet (TF-367), "*Hyolithes*" sp. at 265 feet (TF-368), and the free cheek of a large trilobite at 292 feet (TF-369). No other fossils were seen in interval 23, although search was made for them in the cherty zone.			
Hand samples at 270, 292, 312, and 327 feet. At 270 feet, dolomite, fine-grained; very light gray, grayish orange-pink, very pale red, mottled, reddish color appears to be from very			

Description	Thickness in feet: Interval	Cumulative	Feet above base
finely disseminated hematite. At 292 feet, dolomite, fine-grained, similar to above except for some hematitic dendrites and a few small vugs. At 312 feet, dolomite, very fine grained, very light gray with a pinkish cast, streaked pale-red along fractures partly calcite filled. At 327 feet, dolomite, on border of fine- and medium-grained, pinkish-gray, slightly mottled, many small vugs, a few open fractures.			
Thin sectioned at 270, 292, 312, and 327 feet. At 270 feet, dolomite, grains in some beds about 0.02 to 0.05 mm, in others about 0.05 to 0.15 mm; many specks of bright-red hematite, hematite concentrated along numerous stylolites; silt quartz and feldspar both detrital and authigenic, scarce; a few very tiny areas of chertification. At 292 feet, dolomite, grains in one bed 0.1 to 0.15 mm, in rest of beds mostly 0.15 to 0.2 mm, hypidiomorphic; bright-red hematite specks common (Pl. 15, fig. 1); silt common; tiny grains of glauconite very scarce; a few tiny areas of chertification; small pores and vugs common, some caliche in one vug. At 312 feet, dolomite, very little indication of bedding except that part of the dolomite averages about 0.03 mm and most of rest is slightly coarser (Pl. 15, fig. 2); a few small vugs filled by fine-to medium-grained dolomite; flecks and concentration of flecks of bright-red hematite common; several open fractures. At 327 feet, dolomite, grains mostly 0.15 to 0.25 mm, hypidiomorphic, a few large idiomorphic grains partly fill small vugs; a few flecks of bright-red hematite; pellet ghosts uniformly distributed; post-dolomitization shearing common.			
Base of dolomitic facies of San Saba Member of Wilberns Formation at base of			

Description	Thickness in feet: Interval	Cumulative	Feet above base
interval 23 (altitude approximately 1,335 feet). Thickness of dolomitic facies 73 feet.			
Calcitic facies: 144 feet thick			
24. Limestone and dolomitic limestone, with dolomitic limestone predominating in the lower and upper 4 feet--fine-grained to microgranular, in part aphanitic where the limestone is purest; conspicuously oolitic from 250.5 to 251 feet. Light brownish-gray to deep pinkish-purple, with irregular streaks and mottles of rose to salmon-pink, greenish-gray, and yellow to buff; the more vivid colors predominate in the upper 6 feet, beginning with a 4-inch band of dark pinkish-purple, slightly glauconitic limestone. Beds from a fraction of an inch to 12 inches thick. Weathers rough to smooth, medium bluish-gray, with dirty-brown to brownish-buff elevated streaks and mottles where dolomitic.	23	729	236-259
Globular glauconite was noted at 251, 253.5, and 255 feet, and occasionally throughout the upper 6 feet. Other macroscopically detectable resistant elements consist only of minor irregular argillaceous films in the purer parts of the limestone. Siliceous residues show significant amounts of fine silt, containing scattered flakes of clear mica.			
Except for stromatolites of the cryptozoon type from 238 to 240 feet and occasional girvanellas no "structures" of organic origin were seen.			
Hand sample at 251 feet. Limestone, fine-grained, pale yellowish-brown, mottled by aphanitic, yellowish-gray; aphanitic part slightly oolitic, rest very oolitic, ooids have both radial			

Description	Thickness in feet: Interval	Cumulative	Feet above base
and concentric structure; glauconite(?) as very tiny specks.			
Thin sectioned at 251 feet. Limestone, in part irregular, patchy, aphanitic beds or intraclasts contain numerous ooids and trilobite fragments, ooids stand in relief along margins (Pl. 14, fig. 6); in part very abundant ooids, numerous small intraclasts in part pelleted and a few fossil fragments in a very fine grained to microgranular clear calcite matrix; ooids mostly radial, concentric structure scarce, aphanitic to microgranular centers common; many small intraclasts consist of an ooid and some adhering aphanitic limestone (probably derived from the ooid-bearing aphanitic limestone); a few larger intraclasts in which ooids are less distinct, contain some fossil debris and are derived from beds not represented in the thin section; silt and altered lobate to fragmental glauconite(?) very scarce.			
25. Limestone; in part with minor irregular inclusions of dolomitic limestone, especially above 127 feet; grading to slightly dolomitic limestone at top--aphanitic to medium-grained, being visibly granular principally in the dolomitic portions but with some beds of granular fragmental limestone; conspicuously oolitic in the lower 8 inches and in a 1-inch band at 117.5 feet. Light brownish- to greenish-gray, grading to pearl-gray or silver, with mottles and streaks of buff to yellow or pinkish-bronze where dolomitic and in part with irregular greenish films of argillaceous material. Beds from a fraction of an inch to 42 inches thick, generally thinner bedded in lower 12 and upper 12 feet, with intervening beds averaging 18 to 24 inches thick. Weathers to uneven, fairly regular, medium-bluish to in part brownish-gray ledges	125	850	115-236

Description	Thickness in feet: Interval	Cumulative	Feet above base
with irregularly raised buff mottles and streaks where dolomitic.			
Chert was seen at 128 feet as minor excrescences that are semiporcelaneous to chalk textured and dull brownish-white. Siliceous residues from the lower 15 and upper 35 feet of interval 25 show relatively small amounts of fine silt, containing scattered flakes of clear mica. The residues from the intervening rocks are even smaller in quantity, showing very minor silt and small amounts of finely crystalline silica and pale argillaceous flakes. On the basis of siliceous residues alone, this interval, and interval 24 above it, could easily be miscorrelated with the basal 130 feet of the Tanyard Formation in the Pete Hollow section on Llano River in Mason County.			
Although rare specks of glauconite were seen the interval seems to be essentially nonglauconitic.			
Although fragments of fossils are common in the intermittently occurring fragmental limestone beds, identifiable macrofossils are generally uncommon. A single calcitic trilobite was collected from float probably derived from 185 feet (TF-365), and silicified Billingsella were collected from 194 to 196 feet (TF-366). Girvanellas occur intermittently throughout the interval but are generally not conspicuous on weathered surfaces. Hexactinellid sponge spicules are fairly common in some of the limestone from 125 to 130 feet.			
Hand samples at 115.5, 127, 150, 170, 196, and 235 feet. At 115.5 feet, limestone, granular; very light olive gray to light olive, mottled; numerous ooids with distinct radial structure, a few girvanella, numerous trilobite			

Description	Thickness in feet: Interval	Cumulative	Feet above base
fragments and a few pebble-size oolitic intraclasts mostly in a milky calcite matrix, some clear calcite matrix. At 127 feet, limestone, microgranular; very light olive gray to light olive gray; a few dolomite mottles and irregular streaks along the bedding, very fine grained, light grayish-orange; in one bed milky intraclasts in a clear calcite matrix; a few clear calcite veins. At 150 feet, limestone, very fine grained (on polished surface appears aphanitic); yellowish-gray to very light olive gray; some mottles of dolomite, very fine grained, grayish-orange; a few fossil fragments; some short gash veins of clear calcite. At 170 feet, limestone, aphanitic; yellowish-gray, some yellowish-orange specks; a few mottles of dolomite, very fine grained, grayish-orange; some fossil debris, mostly translucent; girvanella abundant, in part removed along stylolites. At 196 feet, limestone, aphanitic; yellowish-gray; mottled by dolomite, very fine grained, yellowish-orange; several calcite veins; a few translucent fossil fragments; a few girvanella; stylolites scarce. At 235 feet, limestone, very fine grained; pale yellowish-orange; mottled by dolomite, very fine grained, grayish orange-pink; a few narrow, clear calcite veins; fossil fragments scarce.			
Thin sectioned at 115.5, 127, 150, 170, 196, and 235 feet. At 115.5 feet, limestone, mostly ooids that interfere with each other and merge with the scanty aphanitic matrix as if the ooids had grown in place, radial structure, commonly with fossil fragments for nucleii; a few small patches of aphanitic limestone contain ooids in which each individual calcite crystal scallops the limestone in the manner one should expect if the ooids grew in place;			

Description	Thickness in feet: Interval	Cumulative	Feet above base
glauconite and pelmatozoan debris very scarce; some chertification of brachiopods and perhaps of other type fossil debris. At 127 feet, limestone, mostly densely aphanitic pellets closely packed in scant, fairly clear, microgranular matrix (Pl. 14, fig. 4); one bed contains intraclasts, some trilobite and secondarily enlarged pelmatozoan debris, a girvanella, and numerous pellets in a very fine grained, clear calcite matrix; the girvanella is densely aphanitic, contains straight spicules(?); intraclasts aphanitic, contain some fossil debris, silt scarce; glauconite fairly common, fragmental; silt scarce to common in some beds, especially along an irregular, limonitic clay-bearing bed or zone of stylolites, silt mostly detrital feldspar, a few rhombs; dolomite 0.05 to 0.25 mm, mostly concentrated in one bed, some interstitial clay, replaces peripheral part of an intraclast; a thin gash vein of calcite cuts the girvanella but terminates shortly beyond. At 150 feet, limestone, densely aphanitic; irregular patches of dolomite common, grains 0.02 to 0.08 mm, fairly clear, much included calcite; a few mosaics of clear calcite may fill voids; stylolites scarce; many delicate trilobites and much trilobite debris; a few cellular fossils with synchronous extinction, up to 2.5 mm long and 0.12 mm thick, individual cells 0.05 to 0.1 mm in size, open at one end. At 170 feet, limestone, trilobite, calcareous brachiopod, pelmatozoan debris, and girvanella in a densely aphanitic matrix; girvanella of about same density as matrix contain a few to many, straight, calcitic spicules(?) (Pl. 14, fig. 5); silt scarce, mostly feldspar, mostly concentrated in brown clay along			

Description	Thickness in feet: Interval	Cumulative	Feet above base
stylolites; a few patches of dolomite mostly associated with larger fossil fragments, rhombs 0.05 to 0.15 mm, mostly replaced by limonite-stained calcite. At 196 feet, limestone--brachiopods in part silicified, gastropods, finely comminuted trilobite debris and dolomite in a densely aphanitic matrix; in one small area pellets and intraclasts in a microgranular matrix; silt, mostly feldspar, a few rhombs; dolomite 0.05 to 0.1 mm, mostly in patches, in part may replace fossil fillings or intraclasts, partly replaced by calcite and admixed limonite, much interstitital limonitic clay; some limonitic clay and silt along stylolites; a vein of medium-grained, clear calcite terminates at a stylolite. At 235 feet, limestone and dolomite, mostly limestone, aphanitic, pelleted, a few trilobite and pelmatozoan fragments and dolomite rhombs; dolomite in 0.25- to 0.5- inch mottles, 0.03 to 0.12 mm, hypidiomorphic, included calcite and interstitial limonitic material common, all evidence of pellets disappears during dolomitization; a few tiny patches of chertified pelmatozoan debris; silt scarce, mostly feldspar; stylolites indistinct.			
Base of the San Saba Member of Wilberns Formation at base of interval 25. Thickness of member 144 feet.			
<u>Point Peak Member: 115 feet measured, and all assigned to upper biohermal zone</u>			
26. Limestone, probably with interbedded shale and shale partings represented by covered parts--the exposed limestone is microgranular to fine-grained, with minor aphanitic inclusions, largely fragmental and in part crowded with unrecognizable cross sections of fossils.	14.5	864.5	100.5-115

Description	Thickness in feet: Interval	Cumulative	Feet above base
Greenish-to brownish-gray, in part with dusty-green argillaceous films and small green specks of glauconite. Beds a fraction of an inch to 4 inches thick. Mostly covered in the lower half, thinly bedded and poorly exposed in the upper half. The upper limestones weather to thin, medium bluish-gray plates or banded blocks, but in the covered basal portion are crinkly-surfaced green plates of fine-grained micaceous limestone such as commonly characterize the Point Peak Member.			
Small globules of glauconite and greenish argillaceous films occur in some beds. Minor amounts of fine silt with scattered flakes of clear mica appear in the siliceous residues.			
Fossils consist of a few unidentified gastropods, cross sections of uncertain nature, and a few small pelmatozoan columnals with a very small lumen probably representing cystoids. Monaxon and hexaxon sponge spicules were noted in the upper part of the interval. A few girvanellas were also seen.			
The weathered expression of interval 26 suggests a zone of interbedded limestone and shale such as is normal to the Point Peak Member, and probably fresh exposures would reveal shale in the covered portions of interval 26. Plectotrophia, which here probably occurs 5 to 10 feet below the base of interval 26, occurs about 30 feet below the base of the calcitic facies of the San Saba Member and within the normal facies of the Point Peak Member in the north limb of the Honey Creek basin where stromatolitic bioherms are small and insignificant. On the basis of the apparent position of Plectotrophia and the known associations			

Description	Thickness in feet: Interval	Cumulative	Feet above base
of the stromatolitic bioherms in which it occurs, it would be logical to draw the member boundary at the top of interval 26 even if there were no shale in it.			
Hand sample at 110 feet. Limestone, aphanitic; in part very light greenish gray with pebble-size intraclasts; in part very light olive gray with translucent trilobite debris in a milky to clear calcite matrix; some greenish-gray clay along a stylolite.			
Thin sectioned at 110 feet. Limestone, abundant trilobite debris, a few pelmatozoan fragments and intraclasts (probably filled cavities of fossils) mostly in a pelleted, aphanitic matrix, some fine-to coarse-grained, clear calcite mostly fills space along lower side of fossils and intraclasts; intraclasts densely aphanitic, some very finely divided fossil debris; silt and glauconite scarce, silt mostly feldspar; a few spicules in part replaced by psuedopleochroic calcite.			
27. Limestone: a biostrome, or a zone of coalesced stromatolitic bioherms that are locally slightly dolomitic--aphanitic, grading to fine-grained where dolomitic; with pockets of fine-to coarse-grained, glauconitic, clastic limestone. Greenish to brownish or olive-gray, with mottles and streaks of buff where dolomitic and duller dusty-green where argillaceous films are present; the color distribution is uneven and clouding and mottling is the rule. Bedding indistinct, generally massive, with individual ledges up to 4 feet thick. Weathers to uneven, hummocky surfaces or fairly even massive ledges that are medium- to dark bluish-to brownish-gray and locally streaked and mottled with buff	81	945.5	19.5-100.5

Description	Thickness in feet: Interval	Cumulative	Feet above base
or brown. Largely covered from 42 to 47, 52 to 62, and 80 to 88 feet, and possibly with minor shale in these intervals.			
This interval of irregularly massive, predominantly aphanitic, biohermal limestone, with its local pockets of granular and glauconitic limesands, persists in the same expression laterally through the Moore Hollow area and westward beyond it to the next major fault. Its stromatolitic nature is betrayed by the local occurrence of recognizable cryptozoon heads, and by the massive, aphanitic, sparingly glauconitic lithology so characteristic of the stromatolitic limestones of the Wilberns Formation throughout the Llano region.			
Globular glauconite is abundant in some of the clastic pockets and scattered grains occur locally in the aphanitic portions. It is most abundant in the lower 40 feet of the interval. Besides glauconite, the minor siliceous residues contain small amounts of fine silt, a little finely crystalline silica, and occasional flakes of argillaceous material. The dorsal valve of a straight-hinged, alate, syntrophoid brachiopod probably assignable to Plectotrophia, Scaevogyra cf. S. elevata Whitfield, and several specimens of a trilobite resembling Platycolpus, except that the glabella does not reach the rim, were collected from limestone between 90 and 95 feet (TF-207). Sections of trilobites were also noticed at 78 and 100 feet.			
Hand samples at 19.5, 30, 50, 70, and 92 feet. At 19.5 feet, limestone, granular, greenish-gray, translucent fossil debris in clear to milky calcite matrix, abundant glauconite, some fine-grained dolomite rhombs. At 30 feet, limestone, aphanitic; greenish-gray, somewhat mottled; fossil fragments			

Description	Thickness in feet: Interval	Cumulative	Feet above base
and a few areas of intraclasts in a milky calcite matrix; elliptical intraclasts in part coated by glauconite; stylolites common. At 50 feet, limestone, aphanitic; light greenish-gray, somewhat mottled very light olive gray; in part aphanitic intraclasts up to granule size, in a clear to milky calcite matrix, in part aphanitic stromatolites with a few trilobite carapaces. At 70 feet, limestone--mostly thin, elongate, aphanitic intraclasts, some dolomite, and a few fossil(?) fragments in a matrix of clear and milky calcite; some stromatolitic aphanitic limestone on each side of specimen is essentially structureless, contains a few fossil fragments; the bulk of the specimen is probably a septum between stromatolites. At 92 feet, limestone, aphanitic; greenish-gray, mottled very light olive gray; slightly dolomitic; mostly intraclastic; numerous trilobites; in part stromatolitic(?); small areas of clear calcite scarce.			
Thin sectioned at 19.5, 30, 50, 70, and 92 feet. At 19.5 feet, limestone, glauconite, dolomite, some trilobite debris, and a few intraclasts and aphanitic gastropod(?) fillings in a medium-to coarse-grained mosaic of secondarily enlarged pelmatozoan debris; intraclasts in part aphanitic, in part replaced by dolomite, some contain glauconite and fossil debris; glauconite 0.1 to 0.15 mm, elliptical to irregular, lobate and fragmental grains, mostly "moth-eaten" appearance from irregularly distributed calcite; about 5 percent dolomite, 0.02 to 0.15 mm, idiomorphic, uniformly distributed, shows some preference for replacing fossil debris, some limonite stain along cleavages and around peripheries, rhombs rarely penetrate glauconite grains. At 30 feet, limestone, mostly densely aphanitic with algal(?) structure (Pl. 14, fig. 3) represented by wavy			

Description	Thickness in feet: Interval	Cumulative	Feet above base
banded to slightly dendritic, fairly clear, microgranular calcite, silt very scarce; a few patches of trilobite and pelmatozoan debris and silt in a faintly pelleted aphanitic matrix; silt mostly feldspar, rhombs common; glauconite very scarce; a few gash veins and filled voids of fine-grained calcite; very little clay along stylolites. At 50 feet, limestone, mostly aphanitic; slightly mottled; trilobite fragments scarce; a few small elliptical areas of calcite, in part microgranular, in part fine-grained, probably fill voids; in part intraclastic with very dense intraclasts in a less dense, aphanitic matrix; glauconite and silt very scarce; silt mostly detrital feldspar; veins of fine-to medium-grained, clear calcite common. At 70 feet, limestone, mostly aphanitic intraclasts and a few trilobite fragments in a very fine grained, clear calcite mosaic; intraclasts in half of slide are thin, small, irregular plates, in the other half they are larger, elliptical, partly replaced by dolomite, the two portions are separated by a stylolite along which is some brown clay; dolomite 0.06 to 0.12 mm, idiomorphic, exceptionally clear and not zoned; one irregular area is microgranular to aphanitic, contains indistinct algal(?) structure, irregular, elongate mosaics of fine-grained, clear calcite filling voids, and glauconite and silt both of which are very scarce. At 92 feet, limestone, trilobite, pelmatozoan, and calcareous brachiopod debris, intraclasts, 0.25 to 1 mm, calcite mosaics and dolomite in a densely aphanitic to microgranular matrix; some relatively clear, calcite in wavy bands, mostly in intraclasts, may represent algal growths; glauconite very scarce; dolomite 0.05 to 0.15 mm, idiomorphic, mostly clear, in part limonite-stained			

Description	Thickness in feet: Interval	Cumulative	Feet above base
along cleavage, mostly without zonal structure, in part replaces intraclasts; a trace of clay along indistinct stylolites.			
Although it was known since April 1944 that the thick zone of stromatolitic limestones so well displayed by interval 27 and extending to the base of interval 30 held a stratigraphic position normally occupied by interbedded shales and limestones of the Point Peak Member, the boundary between the Point Peak and San Saba Members is wrongly drawn at the base of the conspicuous biostrome of zone of biohermal limestones (base of interval 30) on the map of the Moore Hollow area. The map of this area was already in the hands of the engraver when additional work by the authors in other areas made it apparent that the inconsistency perpetrated by including the biohermal zone in the San Saba Member was greater than the inconsistency of including 115 feet of mostly limestone (and probably minor shale) in the Point Peak Member.			
28. Limestone--fine-grained, green, with buff and light gray mottles and specks; a 6-inch bed. Weathers to a single rather dark brownish-gray ledge.	0.5	946	19-19.5
Glauconite is very abundant, being mostly globular but in part interstitial.			
29. Covered--probably an interval of interbedded shale and limestone.	9	995	10-19
30. Limestone, in part with minor irregular inclusions and scattered grains of dolomite--aphanitic grading to fine-grained where dolomitic. Greenish-gray, with mottles and streaks of buff where dolomitic and olive or dusty green along irregular argillaceous films; in part with brownish tinges. Beds irregularly massive, 4 to 34 inches thick, and probably stromatolitic. Weathers uneven, hummocky, medium bluish-gray,	10	965	0-10

Description	Thickness in feet: Interval	Cumulative	Feet above base
in part with brownish and yellowish streaks and mottles.			
Hand sample at 5 feet. Limestone, mostly an aphanitic stromatolite; light greenish-gray to grayish-orange, mottled; in part dolomitic; a few small areas of intraclasts, fossils, and a few ooids in a clear calcite matrix; stylolites common.			
Thin sectioned at 5 feet. Limestone, mottled, faintly pelleted, slightly silty, abundantly intraclastic, dolomitic, and a few trilobite and pelmatozoan fragments in part in an aphanitic matrix, in part in a microgranular, clear calcite matrix; intraclasts aphanitic to microgranular, many of those in aphanitic matrix coated by a thin layer of clear calcite, a few faintly resemble ooids, others may be gastropod fillings; silt very scarce, mostly feldspar both detrital and authigenic the latter as rhombs; very tiny grains of glauconite scarce; distinctly zoned dolomite, 0.1 to 0.2 mm, replaces intraclasts, much weathered, probably replaced by calcite, much limonite stain, some limonitic clay, silt and dolomite along numerous, irregularly trending stylolites; coarse-grained, calcite veins may be younger than stylolites, calcite gash veins appear to be older.			
Base of biohermal limestone zone of Point Peak Member of Wilberns Formation at base of interval 30. Total thickness of zone 115 feet. Total thickness of Wilberns Formation here described 332 feet.			
Base of Moore Hollow section, a segment of the composite Riley Mountain section at base of interval 30. Altitude approximately 1,245 feet. About 800 feet up Moore Hollow from the Riley Mountain fault. Total			

Description	Thickness in feet Interval	Cumulative	Feet above base
thickness of section described herein 582 feet, of which 332 feet belongs to the Wilberns Formation and 250 feet to the Tanyard Formation.			

Description of Insoluble Residues

Description	Thickness in feet Interval	Cumulative	Feet above base
1. Residue--very scarce, slightly more abundant in lower 10 feet. Spot checked for composition using petrographic microscope. From 345 to 350 feet, mostly silt and very fine sand, mostly quartz with inclusions and ragged outlines indicating that it is authigenic, a few feldspar grains mostly weathered; clay flakes common. From 375 to 380 feet, mostly flakes of clay, grains of authigenic quartz scarce, a few green fragments resemble glauconite. From 410 to 415 feet, mostly clay flakes; silt and very fine sand scarce, mostly quartz, a few grains of feldspar. From 435 to 440 feet, mostly clay flakes, authigenic quartz very scarce. Binocular microscope examination shows that residues are mostly clay flakes; a few fragments of white, granular chert from 380 to 385 and 450 to 455 feet; a few fragments of white, opaque, smooth-fracturing chert from 455 to 460 feet; sand grains in a few samples very scarce.	140	140	340-480
2. Residue--fairly common, mostly clay flakes, some authigenic quartz.	10	150	330-340
3. Residue--very scarce, mostly silt-size chert grains and clay flakes.	10	160	320-330
4. Residue--common, mostly silt-size chert grains, a few clay flakes.	10	170	310-320

Description	Thickness in feet: Interval	Cumulative	Feet above base
5. Residue--very abundant, mostly granular, quartzose, dolomoldic chert; some clay flakes.	15	185	295-310
6. Residue--fairly abundant, mostly silt and very fine sand, mostly detrital feldspar weathered brown, some authigenic overgrowth, rhombs scarce, quartz scarce; glauconite scarce; a few dolomoldic clay aggregates throughout; some white, granular, quartzose, very porous chert from 265 to 275 feet; upper sample mostly clay particles of silt and very fine sand sizes Nd>1.544, some dolomoldic aggregates, quartz of silt size common.	35	220	260-295
7. Residue--common, mostly silt and very fine sand, mostly weathered detrital feldspar with some authigenic overgrowth, rhombs very scarce, quartz common; clay flakes abundant; glauconite common in upper sample, abundant in lower sample.	10	230	250-260
8. Residue--common, mostly silt and very fine sand, mostly feldspar rhombs with weathered detrital centers, quartz scarce; glauconite very scarce; some granular, quartzose chert and authigenic quartz crystals in upper 10 feet.	25	225	225-250
9. Residue--fairly common, mostly silt and very fine sand, mostly detrital feldspar with authigenic overgrowth, rhombs abundant, quartz very scarce; clay flakes abundant; in most samples a few fragments of granular, quartzose, porous chert.	45	300	180-225
10. Residue--fairly scarce, mostly clay flakes; detrital feldspar with authigenic overgrowth common, some rhombs; fragments of granular, quartzose chert common.	50	350	100-130

Description	Thickness in feet: Interval	Cumulative	Feet above base
11. Residue--abundant, mostly silt; silt mostly detrital feldspar, weathered to fresh, much authigenic overgrowth, rhombs common; quartz scarce; clay flakes abundant; glauconite common; a few flakes of biotite; a few fragments of granular, quartzose chert in upper sample; hexactinellid spicules common to abundant. (No sample from 105 to 110 feet.)	30	380	100-130
12. Residue--scarce, mostly clay flakes, some silt similar to above.	15	395	85-100
13. Residue--common, mostly silt and very fine sand, mostly detrital feldspar both weathered and clear with authigenic overgrowth, rhombs very abundant, quartz scarce; glauconite common; a few hexactinellid spicules.	5	400	80-85
14. No residue made.	80	480	0-80

East Canyon Stratigraphic Section

The East Canyon section is at the south end of the Riley Mountains and about 13 miles airline southeast of Llano. It is mostly on the Clayton Stribling ranch about 0.45 mile west of the road between Click and State Highway 71. The base of the section is at the base of the Hickory Sandstone, which at this point rests on Packsaddle Schist. Except for two collections by Bell at 568 and 670 feet, all the fossils in the East Canyon section were collected by Nicholls, aided by Elbert A. King, Jr., about 1956.

Thicknesses of units in the East Canyon section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Moore Hollow Group (1,004 feet measured)		
Wilberns Formation (230 feet measured)		
Point Peak Member	101+	903-1,004
Morgan Creek Limestone Member	113	790-903
Welge Sandstone Member	16	774-790
Riley Formation (774 feet)		
Lion Mountain Sandstone Member	33	741-774
Cap Mountain Limestone Member	441	330-741
Hickory Sandstone Member	330	0-330

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 1,004 feet described			
Wilberns Formation: 230 feet described			
Point Peak Member: 101 feet described			
1. Limestone, siltstone, and covered--mostly covered. Limestone fine-grained; gray, weathers tan and gray; mostly intraformational conglomerate; silty; glauconitic; thin-bedded, platy. Siltstone tan, weathers tan, calcareous, glauconitic, thin-bedded.	101	101	903-1,004
Fossils from 904 feet, *Huenella texana* (Walcott), *Drumaspis texana* Resser, pelmatozoan calices, and *Sinuella minuta* Knight; from 916 feet, linguloid, *Billingsella texana* Bell,			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, and Saratogia fria Lochman and Hu; from 917 feet, Angulotreta sp., linguloid, Billingsella texana Bell, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, Saratogia modesta (Lochman and Hu), Wilbernia aff. pero (Walcott), and Sinuella minuta Knight; from 918 feet, trilobite undet. gen. and sp.; from 920 feet, Drumaspis texana Resser, Wilbernia aff. W. pero (Walcott), and Sinuella minuta Knight; from 923 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Saratogia modesta (Lochman and Hu), Wilbernia expansa Frederickson, and Sinuella minuta Knight; from 930 feet, Billingsella texana Bell, Pseudagnostus cf. P. communis (Hall and Whitfield), and Drumaspis idahoensis Resser; from 932 feet, Pseudagnostus cf. P. communis Hall and Whitfield, Drumaspis idahoensis Resser, Saratogia fria Lochman and Hu, Saratogia modesta (Lochman and Hu), and Wilbernia aff. W. pero (Walcott); from 934 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis idahoensis Resser, Saratogia fria Lochman and Hu, and Saratogia n. sp.; from 935 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis idahoensis Resser, Saratogia fria Lochman and Hu, Saratogia n. sp., and Sinuella minuta Knight.			
Morgan Creek Limestone Member: 113 feet thick			
2. Limestone--fine- to medium-grained; gray, weathers gray; stromatolitic bioherms from 894 to 899 feet; slightly glauconitic; medium-bedded.	74	175	829-903
Fossils collected from 829 feet, orthid brachiopod, and unidentified cranidium; from 830 feet, Linnarssonella			

Description	Thickness in feet: Interval	Cumulative	Feet above base
girtyi Walcott, linguloid, Cliffia lataegenae (Wilson), Elvinia roemeri (Shumard), Iddingsia robusta (Walcott), Irvingella major Ulrich and Resser, and Kindbladia cf. K. affinis (Walcott); from 832 feet, Linnarssonella girtyi Walcott and linguloid; from 834 feet, Kindbladia affinis (Walcott), Elvinia roemeri (Shumard), Pterocephalia sanctisabae Roemer, Linnarssonella girtyi Walcott, and linguloid; from 835 feet, Linnarssonella girtyi Walcott, linguloid, Camaraspis convexa (Whitfield), and Morosa? bothra Stitt; from 840 feet, ocnerorthid, "Eoorthis indianola"? (Walcott), Homagnostus tumidosus (Hall and Whitfield), Camaraspis convexa (Whitfield), Dellea saratogensis (Resser), Dellea suada (Walcott), Elvinia roemeri (Shumard), and Morosa simplexa Stitt; from 841 feet, Linnarssonella girtyi Walcott, Deckera completa Wilson, Dellea suada (Walcott), Dokimocephalus intermedius (Resser), Morosa simplexa Stitt, and Pterocephalia sanctisabae Roemer; from 842 feet, Linnarssonella girtyi Walcott, Dellea suada (Walcott), and Elvinia roemeri (Shumard); from 844 feet, Morosa? bothra Stitt, and ocnerorthid; from 845 feet, Linnarssonella girtyi Walcott, ocnerorthid, Camaraspis convexa (Whitfield), Dellea saratogensis (Resser), Dellea suada (Walcott), Dokimocephalus intermedius (Resser), Elvinia roemeri (Shumard), Morosa? bothra Stitt, Morosa simplexa Stitt, and Pterocephalia sanctisabae Roemer; from 845.5 feet, Linnarssonella girtyi Walcott, Angulotreta microscopica digitalis Bell, linguloid type B, hyolithid, pelmatozoan columnals, ocnerorthid, Camaraspis convexa (Whitfield), Cliffia lataegenae (Wilson), Deckera completa Wilson, Dellea saratogensis (Resser), Dellea suada (Walcott), and Dokimocephalus intermedius (Resser); from 846 feet,			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Linnarssonella girtyi Walcott, ocnerorthid, Camaraspis convexa (Whitfield), Dellea suada (Walcott), Dokimocephalus intermedius (Resser), Elvinia roemeri (Shumard), and Morosa? bothra Stitt; from 847 feet, Sulcocephalus candidus (Resser); from 848 feet, Angulotreta microscopica digitalis Bell, Pseudodicellomus mosaicus (Bell), linguloid type B, Billingsella coloradoensis (Shumard), Eoorthis remnicha (Winchell), Homagnostus sp., Comanchia amplooculata (Frederickson), Irvingella major Ulrich and Resser, aff. Morosa n. sp., Parabolinoides granulosus Ellinwood, and Hyolithes sp.; from 848.3 feet, Angulotreta microscopica (Shumard), Eoorthis remnicha (Winchell), Homagnostus tumidosus (Hall and Whitfield), Comanchia amplooculata (Frederickson), Irvingella major Ulrich and Resser, aff. Morosa n. sp., Parabolinoides contractus Frederickson, Sulcocephalus candidus (Resser), and Hyolithes sp.; from 848.5 feet, Angulotreta microscopica digitalis Bell; from 848.7 feet, Angulotreta microscopica (Shumard), Angulotreta microscopica digitalis Bell, linguloid type B, Billingsella coloradoensis (Shumard), Eoorthis remnicha (Winchell), Irvingella major Ulrich and Resser, Parabolinoides contractus Frederickson, Parabolinoides granulosus Ellinwood, and trilobite undet. gen. and sp.; from 849 feet, Angulotreta microscopica (Shumard), Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), Orygmaspis llanoensis (Walcott), var. A Longacre, Parabolinoides contractus Frederickson, and Pelagiella sp.; from 849.5 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Pelagiella sp., Billingsella coloradoensis (Shumard),			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Orygmaspis llanoensis (Walcott), var. A Longacre, Parabolinoides contractus Frederickson, and pygidium; from 850 feet, Angulotreta microscopica (Shumard), Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), var. A Longacre, Parabolinoides contractus Frederickson, and Pelagiella sp.; from 852 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella coloradoensis (Shumard), Huenella abnormis (Walcott), Conaspis leptoholcus Longacre, Conaspis testudinatus Ellinwood, Orygmaspis llanoensis (Walcott, and Wilbernia halli Resser, var. A Ellinwood; from 855 feet, Angulotreta microscopica (Shumard), Billingsella coloradoensis (Shumard), Huenella abnormis (Walcott), Conaspis testudinatus Ellinwood, Orygmaspis llanoensis (Walcott), and Wilbernia halli Resser, var. A Ellinwood; from 857 feet, Taenicephalus shumardi (Hall), Orygmaspis llanoensis (Walcott), and Billingsella coloradoensis (Shumard); from 860 feet, Taenicephalus shumardi (Hall) and Billingsella coloradoensis (Shumard); from 861 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella coloradoensis (Shumard), and Taenicephalus shumardi (Hall); from 864 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell) and Taenicephalus shumardi (Hall); from 866 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), and Taenicephalus shumardi (Hall); from 868 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), and Billingsella texana Bell; from 875 feet, Billingsella sp., Huenella abnormis (Walcott), Pseudagnostus cf. P. communis (Hall and Whitfield), Conaspis masonensis Ellinwood, Taenicephalus			

Description	Thickness in feet: Interval	Cumulative	Feet above base
shumardi (Hall), and taenicephalids; from 876 feet, Billingsella texana Bell, Huenella texana (Walcott), Pseudagnostus cf. P. communis (Hall and Whitfield), and taenicephalids; from 877 feet, Pseudagnostus cf. P. communis (Hall and Whitfield); from 885 feet, cf. Angulotreta, linguloid fragments, Pelagiella sp. or Sinuella sp.; from 889 feet, Billingsella texana Bell and Wilbernia cf. W. diademata (Hall); from 894 feet, Angulotreta sp., Idahoia lirae (Frederickson), Idahoia lirae (Frederickson), var. A Bell in Bell and Ellinwood, Saratogia americana (Lochman and Hu), and Wilbernia diademata (Hall); from 897 feet, Billingsella texana Bell, Pseudagnostus cf. P. communis (Hall and Whitfield), Saratogia americana (Lochman and Hu), Wilbernia diademata (Hall), Wilbernia expansa Frederickson, and pelmatozoan calices.			
3. Limestone--fine- to medium-grained, a few coarse grains; green, gray, weathers gray and smooth, basal 22 feet reddish-gray to red; glauconitic to very glauconitic; basal 25 feet sandy; fossiliferous; medium- to thick-bedded.	39	214	790-829
Fossils collected from 790 feet, Linnarssonella girtyi Walcott, orthid brachiopod, Homagnostus tumidosus (Hall and Whitfield), Dytremacephalus n. sp. 2, Elburgia aff. E. granulosa (Hall and Whitfield), Elvinia roemeri (Shumard), Pterocephalis sanctisabae Roemer, and Pseudosaratogia aff. P. magna Wilson; from 806 feet, Linnarssonella girtyi Walcott and Plataspella anatina (Walcott); from 808 feet, Kindbladia wichitaensis (Resser); from 809 feet, Linnarssonella girtyi Walcott, linguloid type A, Cliffia lataegenae (Wilson), and			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Elvinia roemeri (Shumard); from 813 feet, Elvinia roemeri (Shumard), Kindbladia wichitaensis (Resser), and Linnarssonella girtyi Walcott; from 816 feet, Linnarssonella girtyi Walcott, Homagnostus tumidosus (Hall and Whitfield, and Plataspella sp.; from 823 feet, Linnarssonella girtyi Walcott, Homagnostus tumidosus (Hall and Whitfield), Homagnostus sp., Pseudagnostus cf. P. communis (Hall and Whitfield), Cliffia lataegenae (Wilson), Dellea suada (Walcott), Elvinia roemeri (Shumard), Iddingsia robusta (Walcott), Irvingella major Ulrich and Resser, Kindbladia wichitaensis (Resser), Plataspella anatina (Resser), Pterocephalia sanctisabae Roemer, and Xenocheilos minutum Wilson; from 823.5 feet, Linnarssonella girtyi Walcott, Homagnostus tumidosus (Hall and Whitfield), Homagnostus sp., Pseudagnostus cf. P. communis (Hall and Whitfield), Cliffia lataegenae (Wilson), Dellea suada (Walcott), Elvinia roemeri (Shumard), Irvingella major Ulrich and Resser, Kindbladia wichitaensis (Resser), Plataspella anatina (Resser), Xenocheilos minutum Wilson, and trilobite undet. gen. and sp.; from 825 feet, Linnarssonella girtyi Walcott, Homagnostus tumidosus (Hall and Whitfield), Dellea suada (Walcott), Elvinia roemeri (Shumard), and Pterocephalia sanctisabae Roemer; from 828.5 feet, Kindbladia wichitaensis (Resser) and Linnarssonella girtyi Walcott.			
Welge Sandstone Member: 16 feet thick			
4. Sandstone--medium- to coarse-grained; tan, weathers gray to tan; slightly glauconitic; grains rounded, well-sorted; medium- to thick-bedded.	16	230	774-790
Trilobite coquinite at 790 feet.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected from 788 feet, *Elburgia* aff. *E. granulosa* (Hall and Whitfield) and *Pseudosaratogia* aff. *P. magna* Wilson.			
Riley Formation: 774 feet thick			
Lion Mountain Sandstone Member: 33 feet thick			
5. Sandstone, limestone, and covered--mostly covered. Sandstone coarse-grained, a few medium grains; tan, green, weathers gray and green; very glauconitic; sand rounded; thin- to medium-bedded. Limestone white, glauconitic, thin lenses of trilobite coquinite.	33	263	741-774
Fossils collected from 746 feet, *Angulotreta triangularis* Palmer, linguloids types A and B, *Aphelaspis* sp., *Dunderbergia* cf. *D. nitida* (Hall and Whitfield), *Dytremacephalus* n. sp.; from 748 feet, *Angulotreta triangularis* Palmer, linguloids types A and B, *Pseudagnostus* cf. *P. communis* (Hall and Whitfield), and aff. *Taenora*? *platifrons* (Palmer); from 755 feet, linguloids types A and B, *Aphelaspis constricta* Palmer, *Aphelaspis convexi-marginatus* (Palmer), and spinose dytremacephalid; from 755.5 feet, *Aphelaspis conveximinarginatus* (Palmer) and linguloids types A and B; from 765 feet, *Apsotreta expansa* Palmer, linguloids types A and B, *Aphelaspis conveximinarginatus* (Palmer), *Blandicephalus texanus* Palmer, *Dunderbergia* cf. *D. nitida* (Hall and Whitfield), and *Dytremacephalus granulosus* Palmer; from 767 feet, *Aphelaspis* cf. *A. conveximinarginatus* (Palmer); from 772 feet, *Apsotreta expansa* Palmer, *Dytremacephalus granulosus* Palmer, *Pterocephalia* cf. *P. concava* Palmer, and undetermined pygidium.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Cap Mountain Limestone Member: 411 feet thick			
6. Limestone--mostly fine-grained; buff, weathers buff and gray; very silty at base, silt absent above 660 feet; fine sand in upper 48 feet; mostly medium- to thick-bedded, thin-bedded upward; fossiliferous. In upper 16 feet very coarse grained trilobite coquinite, very glauconitic, sandy. From 636 to 640 feet, fine- to medium-grained, gray, angular blocks up to 2 feet long in a silty limestone matrix, medium-bedded, poorly exposed.	151	414	590-741
Fossils collected from 606 feet, Tricrepicephalus thoosa (Walcott), Micromitra sp., Opisthotreta depressa Palmer, and Kinsabia sp.; from 634 feet, Tricrepicephalus sp.; from 638 feet, Coosella beltensis Lochman, Coosella cf. C. granulosa Rasetti, Kingstonia (Ucebia) pontotocensis (Lochman), Coosina sp., Meteoraspis metra (Walcott), Tricrepicephalus thoosa (Walcott), trilobite gen. and sp. undet., Kinsabia sp., and acretretoid; from 640 feet, Kingstonia (Ucebia) pontotocensis (Lochman) and Coosina sp.; from 650 feet, Diraphora? sp., Coosia connata (Walcott), Crepicephalus sp., Kingstonia (Ucebia) pontotocensis (Lochman), Llanoaspis modesta (Lochman), and Meteoraspis metra (Walcott); from 654 feet, Coosella cf. C. granulosa Rasetti; from 669 feet, Coosella cf. C. widnerensis (Resser), Kingstonia (Ucebia) ariston (Walcott), Tricrepicephalus sp., and Diraphora? sp.; from 675 feet, Kingstonia (Ucebia) pontotocensis (Lochman), Meteoraspis metra (Walcott), and Tricrepicephalus thoosa (Walcott); from 683 feet, Opisthotreta depressa Palmer, linguloid, Diraphora? sp., Crepicephalus australis Palmer, and			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Kingstonia (Ucebia) pontotocensis (Lochman); from 685 feet, Crepicephalus australis Palmer, Meteoraspis metra (Walcott), and Tricrepicephalus thoosa (Walcott); from 698 feet, Coosina cf. C. ariston (Walcott); from 703 feet, Diraphora? sp., Coosina cf. C. ariston (Walcott), and Llanoaspis undulata Lochman; from 712 feet, Kormagnostus simplex Resser, Pseudagnostina? nordica (Lochman), Coosella cf. C. granulosa Rasetti, and Llanoaspis undulata granulata Palmer; from 718 feet, Llanoaspis undulata granulata Palmer; from 721 and 724 feet, Coosina cf. C. ariston (Walcott); from 725 feet, Aphelaspis sp.; from 727 feet, paterinid, Angulotreta triangularis Palmer, Angulotreta triangularis digitalis Palmer, linguloid type A, Aphelaspis sp., Taenora? platifrons (Palmer), and unassigned cranidium and pygidium; from 728 feet, Aphelaspis sp.; from 729 feet, Aphelaspis sp. and Coosella perplexa (Palmer); from 730 feet, Aphelaspis sp. and Taenora? Platifrons (Palmer); from 733 feet, Aphelaspis sp. and Glaphyraspis ornata (Lochman); from 734 feet, Taenora? platifrons (Palmer); from 735.5 feet, Angulotreta triangularis Palmer and Listroa longifrons (Palmer).			
Fossils collected by Bell from 670 feet, Dicellomus fragments.			
7. Limestone--fine-grained; gray, tan, weathers gray; slightly sandy; glauconitic; slightly oolitic; from 552 to 580 feet, bronze spheres, limonitic with calcite centers; medium-bedded.	45	459	545-590
Fossils from 554 feet, paterinid, acrotretoid, Kormagnostus simplex Resser, Meteoraspis cf. M. robusta Lochman, Syspacheilus cf. S. camurus			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Lochman, and Tricrepicephalus sp.; from 576 feet, paterinid, Apsotreta orifera Palmer, and Syspacheilus cf. S. camurus Lochman; from 578 feet, paterinid, Apsotreta orifera Palmer, Cedaria eurycheilos Palmer, and Tricrepicephalus thoosa (Walcott); from 589 feet, Tricrepicephalus cf. T. texanus (Shumard). Fossils collected by Bell from 568 feet, Angulotreta sp., Opisthotreta sp., Kinsabia variegata Lochman, and paterinid.			
8.	Limestone and sandstone--medium-grained; red, weathers red and gray; sandy limestone grading to calcareous sandstone; some interbedded, fine-grained, buff, silty beds; sand grains fine, rounded, enveloped by shells of hematite. Fossils from 516 feet, Syspacheilus cf. S. dunoirensis Miller; from 519 feet, Cedaria eurycheilos Palmer; from 520 feet, Syspacheilus cf. S. camurus Lochman; from 525 feet, Kormagnostus simplex Resser.	70	529	475-545
9.	Sandstone and limestone--sandstone fine-grained, some coarse grains; brown, minor amount of red, weathers brown; very calcareous; scattered quartzite bands; indurated; grains rounded to subangular, some hematite and "bronze" coatings; slightly fossiliferous; cross-bedded, medium-bedded. Limestone fine-grained; buff, weathers gray; slightly glauconitic; very sandy, sand fine, a few coarse grains, angular to rounded.	67	596	408-475
10.	Limestone--fine-grained; buff, tan, weathers gray; very sandy, grains fine, subangular; glauconitic; slightly fossiliferous; medium-bedded.	78	674	330-408

Description	Thickness in feet: Interval	Cumulative	Feet above base
Hickory Sandstone Member: 330 feet thick			
11. Sandstone--coarse-grained; brown, weathers brown; flat sandstone pebble intraformational conglomerate common; some limonitic and quartzitic bands; top part very calcareous; grains subangular to rounded; fossiliferous; thick bedded, poorly exposed.	100	774	230-330
12. Sandstone--fine- to coarse-grained, mostly medium-grained; top 30 feet tan, rest white and buff, weathers white, tan, and brown; friable; grains subrounded, fairly well sorted; fossiliferous; medium to thick bedded.	75	849	155-230
13. Sandstone--fine- to very coarse-grained, some granules and pebbles; tan, weathers tan; some intraformational conglomerate sandstone pebbles and angular quartz fragments; friable to indurated; sorting poor to good; cross-bedded, massive, poorly exposed.	145	994	10-155
14. Conglomerate--angular quartz cobbles up to 8 inches; tan, weathers tan; sand matrix coarse; massive.	10	1,004	0-10

Fossils from Packsaddle Mountain

For most of the Cambrian sections in the Llano region, Bell updated the original fossil lists, but for the Packsaddle Mountain collections this was not accomplished. Bell's original lists, although not greatly different from the updated ones in other sections, should be cross-checked against Longacre (1970) for trilobite species above the base of the Eoorthis bed. For each species treated, Longacre lists each section and each footage in the section at which the species occurs.

Sheppard, Wilson, and Ellinwood made fossil collections from Packsaddle Mountain and these have been keyed into the following stratigraphic footages:

Top of north peak of Packsaddle Mountain	940 feet
Eoorthis bed, north peak	885 feet
Top of south peak of Packsaddle Mountain	834 feet
Top of Welge Sandstone	820 feet
Top of Lion Mountain Sandstone	808 feet
Top of Cap Mountain Limestone	770 feet
Top of Hickory Sandstone	390 feet

A geologic map of the Packsaddle Mountain area is shown in Part 1, Pl. 7, fig. 21.

The collections made are listed as follows:

Fossils collected by Sheppard from 744 feet, Glaphyraspis ornata (Lochman) and Aphelaspis walcotti Resser; from 749 feet, Dunderbergia variagranula Palmer, Aphelaspis walcotti Resser, Pseudagnostus cf. P. communis (Hall and Whitfield), Angulotreta triangularis Palmer, and linguloid type B; from 753 feet, Aphelaspis sp., Homagnostus? sp., and linguloids; from 757 feet, Aphelaspis sp. and linguloids; from 757.5 feet, Angulotreta triangularis Palmer, Labiostria? sp., and linguloids; from 759 feet, Aphelaspis sp. and Angulotreta triangularis digitalis Palmer; from 763.5 feet, Aphelaspis walcotti? Resser; from 764.5 feet, Aphelaspis walcotti Resser, Listroa longifrons (Palmer), Sigmocheilus sigmoidalis (Palmer), undet. aphelaspids, and linguloids; from 768 feet, Dytremacephalus granulosus Palmer, Aphelaspis conveximarginata (Palmer), Sigmocheilus sigmoidalis (Palmer), and linguloids; from 775.5 feet, Dunderbergia variagranula Palmer, Blandicephalus texanus Palmer, Aphelaspis walcotti Resser, and Dytremacephalus? sp.; from 776 feet, Dytremacephalus granulosus Palmer and Pseudagnostus cf. P. communis (Hall and Whitfield); from 776.5 feet, Dytremacephalus granulosus Palmer, Blandicephalus? sp., Apsotreta expansa Palmer, and linguloid B; from 778 feet, Dytremacephalus granulosus Palmer, Apsotreta expansa Palmer, and linguloid A; from 783 feet, Dytremacephalus granulosus Palmer; from 792.5 feet, Elvinia roemeri (Shumard), and undet. trilobite.

Fossils collected by Wilson from 810.5 feet, Dellea saratogensis glabellamersa (Wilson) and linguloid fragments; from 834 feet, Elvinia roemeri (Shumard), and Linnarssonella girtyi Walcott; from 846 feet, Elvinia roemeri (Shumard), Kindbladia sp., and linguloid fragments; from 859 feet, Elvinia roemeri (Shumard), Linnarssonella girtyi Walcott, and linguloid; from 866 feet, Irvingella major Ulrich and Resser, Linnarssonella girtyi Walcott, and linguloid;

from 874 feet, Elvinia roemeri (Shumard), Camaraspis convexa (Whitfield), Dellea suada (Walcott), Iddingsia sp., and Linnarssonella girtyi Walcott; from 876 feet, Elvinia roemeri (Shumard), Camaraspis convexa (Whitfield), Dellea suada (Walcott), "Plataspella" sp., Linnarssonella girtyi Walcott, linguloid, and spicules; from 884 feet, Irvingella major Ulrich and Resser, Angulotreta aff. microscopica (Shumard), Angulotreta aff. triangularis Palmer, and linguloid type A.

Fossils collected by Ellinwood from 885 feet, Parabolinoides contractus Frederickson, Irvingella major Ulrich and Resser, Eoorthis remnicha (Winchell), Billingsella coloradoensis (Shumard), Eoorthis indianola (Walcott), Angulotreta aff. microscopica (Shumard), Angulotreta aff. triangularis Palmer, Comanchia amplooculata (Frederickson), Parabolinoides granulosus Ellinwood, and linguloid.

Fossils collected by Wilson from 885.5 feet, Parabolinoides contractus Frederickson, Billingsella coloradoensis (Shumard), Angulotreta microscopica (Shumard), Ceratreta hebes Bell, pelmatozoan columnal(?), and gastropod; from 886 feet, Taenicephalus gouldi (Frederickson) and Orygmaspis llanoensis (Walcott).

Fossils collected by Ellinwood from 886 feet, Eoorthis remnicha (Winchell), Eoorthis indianola (Walcott), Parabolinoides contractus Frederickson, Taenicephalus gouldi (Frederickson), Irvingella major Ulrich and Resser, Comanchia amplooculata (Frederickson), Angulotreta microscopica (Shumard), and linguloid; from 888 feet, Conaspis testudinatus Ellinwood, Orygmaspis llanoensis (Walcott), Wilbernia halli Resser, var. A Ellinwood, Huenella abnormis (Walcott), Billingsella coloradoensis (Shumard), and Conaspis leptoholcus Longacre; from 895 feet, Taenicephalus shumardi (Hall) and Orygmaspis sp.; from 922 feet, Idahoia lirae (Frederickson), Wilbernia diademata (Hall), and free cheek.

Fossils from Cap Mountain

Fossils collected are chiefly from the Lion Mountain Sandstone Member of the Riley Formation. The lowest collection may be from the Cap Mountain Limestone Member and the highest collection is from the Wilberns Formation. Bell checked the fossil identifications in July 1965. Fossils collected are listed as follows:

Fossils collected by Sheppard from 0 feet, Llanoaspis undulata granulata Palmer, Coosina sp., Coosia sp., and linguloid fragments; from 5 feet, Aphelaspis aff. spinosa Palmer, Glaphyraspis ornata (Lochman), Dictyonina perforata Palmer, and Angulotreta sp.; from 5.8 feet, Apehlaspis aff. spinosus Palmer, Dictyonina perforata Palmer, and Angulotreta triangularis Palmer; from 6.5 feet, Aphelaspis cf. walcotti Resser, Glaphyraspis aff. ornata (Lochman), Dictyonina perforata Palmer, and Angulotreta triangularis Palmer; from 7.3 feet, Aphelaspis walcotti Resser, Glaphyraspis ornata (Lochman), Dictyonina perforata Palmer, and Angulotreta triangularis Palmer; from 8.3 feet, Angulotreta triangularis Palmer; from 10.1 feet, Listroa longifrons (Palmer), Dunderbergia variagranula Palmer, Aphelaspis aff. A. walcotti Resser, Angulotreta triangularis Palmer, linguloid A, and Micromitra; from 15.3 feet, Apehlaspis aff. walcotti Resser, Angulotreta triangularis Palmer, and linguloid type B; from 15.8 feet, Aphelaspis aff. walcotti Resser, Taenora(?) platifrons (Palmer), cf. Dytremacephalus granulosus Palmer, Angulotreta triangularis Palmer, linguloids A and B, and Paterina sp.; from 17.8 feet, Aphelaspis aff. walcotti Resser, Dicanthopyge sp., Angulotreta triangularis Palmer, and linguloid B; from 18.5 feet, Aphelaspis walcotti Resser, Pseudagnostus cf. P. communis (Hall and Whitfield), Aphelaspis n. sp., aff. Dytremacephalus sp., Angulotreta triangularis Palmer, and linguloid B.

Fossils collected by Bell from 18.5 feet, Aphelaspis walcotti Resser, Aphelaspis sp., Angulotreta triangularis Palmer, and linguloid B.

Fossils collected by Sheppard from 23.7 feet, Aphelaspis walcotti Resser, Dunderbergia variagranula Palmer, Dytremacephalus granulosus Palmer, and linguloids types A and B; from 25.2 feet, Dunderbergia variagranula Palmer, Dytremacephalus cf. granulosus Palmer, Aphelaspis conveximarginata (Palmer), Paterina sp., and linguloids types A and B; from 27.5 feet, Aphelaspis conveximarginata (Palmer), Dytremacephalus cf. granulosus Palmer, and linguloids types A and B; from 30 feet, Aphelaspis conveximarginata (Palmer), Aphelaspis spinosa Palmer, Cernolimbus sp., and linguloids type A and B; from 35.3 feet, Dunderbergia sp., Dytremacephalus granulosus Palmer, Apsotreta expansa Palmer, and linguloids types A and B; from 51+ feet, Pterocephalia sanctisabae Roemer, Linnarssonella girtyi Walcott, and linguloid type B.

A geologic map of the Cap Mountain area is shown in Part 1, Pl. 7, fig. 22.

White Creek Area, Blanco County

White Creek Stratigraphic Section

The White Creek section, in northwestern Blanco County, is mostly along the eastern valley wall of White Creek; the lower few hundred feet are along Zigzag Creek, a tributary of White Creek. The base of the section, on the Wesley West ranch, is near the base of the Hickory Sandstone Member of the Riley Formation. As much as 15 feet of sandstone could be present in a covered interval between the base of the section and the nearest granite outcrop. The section above 175 feet is on the Crownover ranch and its top is about 1 mile airline south-southeast of the ranch house, 1,600 feet from the eastern property line, 1,300 feet east-northeast of the mouth of a prominent hollow on the east side of White Creek, about 100 feet west of a trap pasture, and 1,300 feet due west of a corral situated along a road through the trap pasture.

The section, essentially continuous, is interrupted only by lateral shifts to take advantage of topography and obtain good exposures. The line of section is shown on the geologic map in Part 1, Pl. 7, fig. 24, and in a somewhat generalized version on the Blowout geologic quadrangle map (Barnes, 1952a). About 50 feet of poorly exposed, fine-grained, cherty dolomite is present above the top of the section. The chert is mostly of a cellular type commonly associated with stromatolites and along the road to the north contains Scaevogrya.

The section was measured and marked in 5-foot intervals by Barnes from August 18 to 22, 1947, while Bell made fossil collections. It was described by Barnes in October 1947, while Palmer chip-sampled each 5-foot interval. The fossil lists were updated by Bell during July 1969. Additional fossil collections were made by Ellinwood, Wilson, Wollman, Palmer, and Sheppard.

Thicknesses of units in the White Creek section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Moore Hollow Group (1,135 feet measured)		
Wilberns Formation (321 feet measured)		
San Saba Member (56 feet measured)		
Dolomitic facies	56+	1,079-1,135
Point Peak Member	111	968-1,079
Morgan Creek Limestone Member	143	825-968
Welge Sandstone Member	11	814-825
Riley Formation (814 feet)		
Lion Mountain Sandstone Member	41	773-814
Cap Mountain Limestone Member	497	276-773
Hickory Sandstone Member	276	0-276

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 1,135 feet described			
Wilberns Formation: 321 feet described			
San Saba Member: 56 feet described			
Dolomitic facies: 56 feet described			
1. Dolomite--mostly medium-grained, much fine-grained, near middle some very fine grained, mottle-like areas; in upper part yellowish-gray to light brownish-gray in part with a pinkish cast, mottled and speckled by grayish-red, in lower part yellowish-gray to yellowish-orange, argillaceous, some grayish-red mottles; coarser grained part weathers to rounded boulders, finer grained part forms rectangular blocks.	27	27	1,108-1,135
Fossils collected by Bell from 1,135 feet, *Billingsella corrugata inornata* Ellinwood; from 1,135± feet, *Scaevogyra swezeyi* Whitfield.			
2. Dolomite--upper 10 feet fine to very fine grained, rest mostly medium, some fine-grained; yellowish-gray in part with a greenish cast to greenish-gray, mottled; in part slightly calcareous; argillaceous; residue mostly clay of low birefringence, index of refraction less than quartz, contains tiny sericite flakes; many tiny rhombs of authigenic feldspar, none found in clay, a few rhombic molds in clay may be dolomolds; weathers yellowish-brown and to baseball-size cobbles, an occasional ledge away from line of section.	29	56	1,079-1,108
The contact between the calcitic and dolomitic facies fluctuated about 10 feet within 100 feet of the line of section.			
Point Peak Member: 111 feet thick			
3. Limestone--mostly aphanitic to micro-granular stromatolites up to 3 feet in diameter, some medium- to coarse-	29	85	1,050-1,079

Description	Thickness in feet: Interval	Cumulative	Feet above base
grained septae up to 6 inches thick; yellowish-gray, a few light-brown mottles, some specks and mottles of yellowish-orange dolomite, has greenish cast when fresh; residue mostly clay, brown, otherwise similar to above, a few very tiny feldspar rhombs; massive, surfaces rounded by spalling.			
Trilobites and silicified brachiopods from 1,060 to 1,075 feet, in granular limestone.			
Fossils collected by Bell from 1,069 feet, Ptychaspis sp., Saratogia modesta (Lochman and Hu), Stigmacephaloides curvabilis Ellinwood, and trilobite gen. and sp. undet.			
SHIFT 600 feet southwestward across deep hollow using bed at 975 feet for making shift; continue down in section southward. From 975 to 1,050 feet, both segments of section laid off in 5-foot intervals.			
4. Limestone--microgranular to aphanitic stromatolites and granular somewhat glauconitic septae; yellowish-gray to very light greenish gray, much speckled and mottled, especially in granular part, by dark yellowish-orange and pale reddish-brown dolomite; slightly silty and argillaceous, silt mostly authigenic feldspar rhombs, many with detrital centers, clay mostly brown similar to above.	9	94	1,041-1,050
5. Limestone--in upper part mostly fine- to coarse-grained, in lower part mostly microgranular to very fine grained; yellowish-gray to light olive-gray, some mottles yellowish-orange to light-brown; darker part argillaceous, silty, silt mostly authigenic feldspar rhombs, many with detrital centers; slightly glauconitic; much intraformational conglomerate, pebbles microgranular to aphanitic, matrix granular; fissile,	14	108	1,027-1,041

Description	Thickness in feet: Interval	Cumulative	Feet above base
beds mostly 0.25 inch, a few up to 1 inch.			
6. Limestone and siltstone--limestone mostly zones of stromatolites up to 2 or 3 feet in size, microgranular to aphanitic, mottled; poorly exposed between zones of stromatolites and individual stromatolites, probably mostly siltstone, some granular, slightly glauconitic limestone; from 1,016 to 1,017 feet, intraformational conglomerate, a few patches of dark yellowish-orange dolomite, one bed. Siltstone light greenish-gray, very calcareous, glauconitic, micaceous, very thinly bedded, mostly float; silt mostly authigenic feldspar rhombs with detrital centers, quartz scarce.	25	133	1,002-1,027
7. Siltstone and limestone--siltstone very light olive gray to greenish gray and grayish orange-pink, very calcareous, glauconitic, argillaceous, muscovite scarce, beds 0.25 inch and less to 2 inches; silt mostly detrital feldspar, some authigenic overgrowth, a few rhombs, quartz abundant. Limestone, from 994 to 995 feet, stromatolites interspersed with intraformational conglomerate; several 2- to 4-inch intraformational conglomerate beds; some coarse-grained.	27	160	975-1,002
Silicified *Billingsella* at 977 and 988 feet; away from line of section at about 1,000±5 feet.			
Fossils collected by Bell from 977 feet, linguloid, *Pelagiella* sp. and/or *Sinuella* sp., *Billingsella texana* Bell, *Pseudagnostus* cf. *P. communis* (Hall and Whitfield), *Drumaspis idahoensis* Resser, *Saratogia fria* Lochman and Hu, *Wilbernia* cf. *W. pero* (Walcott); from 988 feet, linguloid, *Billingsella texana* Bell, *Pseudagnostus* cf. *P. communis* (Hall and			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Whitfield); from 1,000 feet, silica spicules, gastropod, and Billingsella texana Bell.			
SHIFT about 1,000 feet south-southeastward along beds; continue down in section southward.			
8. Limestone and siltstone--limestone coarse-grained, yellowish-gray speckled grayish-red and dark yellowish-orange, glauconitic, an 8-inch oolitic bed from 971 to 972 feet, very persistent laterally, top foot 1 bed; siltstone similar to above, poorly exposed, mostly float; the beds in this interval are folded, some folds are sharp.	7	167	968-975
Fossils collected by Bell from 968 feet, Angulotreta sp., linguloid type B, silica spicules, Sinuella? sp., Billingsella sp., Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis idahoensis Resser, Ptychaspis bullasa Lochman and Hu, Saratogia americana (Lochman and Hu), Saratogia fria Lochman and Hu, Saratogia modesta (Lochman and Hu), Taenicephalina globula Lochman and Hu, and Sinuella minuta Knight.			
Morgan Creek Limestone Member: 143 feet thick			
9. Limestone--mostly coarse-grained, a few medium- and fine-grained beds, in upper half several 6- to 12-inch beds very fine-grained to aphanitic, 6- to 18-inch stromatolites separated by granular septae; yellowish-gray, very light gray, very light olive gray, and light greenish-gray, mottled and speckled by dark yellowish-orange and grayish-red dolomite; dolomite patches common along bedding; glauconite scarce to abundant in most beds, absent in a few; silty to slightly silty, silt mostly detrital feldspar, some authigenic overgrowth, a few rhombs, quartz common; mica common	42	209	926-968

Description	Thickness in feet: Interval	Cumulative	Feet above base
in a few samples; a bed of breccia-like intraformational conglomerate in upper part; covered intervals numerous, float mostly thin plates of very silty, argillaceous limestone; bedding wavy, beds less than an inch to about 1 foot, individual beds very persistent laterally; stylolites common in thicker beds.			
Chert at 962 feet, granular, oolitic, small nodules.			
Trilobites abundant; Billingsella replaced by beekite from 950 to 955 feet; phosphatic brachiopods and pelmatozoan columnals common; at 938 feet, trilobites and Billingsella; at 950 feet, trilobites and silicified Billingsella; at 968 feet, trilobites.			
Fossils collected by Bell from 938 feet, Angulotreta sp., Billingsella texana Bell, large gastropod, stellate plate (6 rays), Huenella aff. H. texana (Walcott), and Wilbernia diademata (Hall); from 950 feet, Angulotreta sp., linguloid type B, Sinuella minuta Knight, glauconite spicules, stellate plate, Billingsella texana Bell, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, Ptychaspis bullasa Lochman and Hu, Saratogia americana (Lochman and Hu), and Saratogia fria Lochman and Hu.			
Fossils collected by Ellinwood from 932 feet, Angulotreta sp., linugloid type B, and aglaspid?; from 955 feet, linguloid type B and silicified columnals.			
10. Limestone--mostly coarse-grained, a few medium- to fine-grained beds, some aphanitic to very fine grained may be stromatolitic; light to very light gray, very light olive gray, very light greenish gray, some specks of yellowish-orange dolomite; hand-size to square-yard dolomite patches common, very fine grained; some mottles and thin beds are either very silty limestone or very calcareous siltstone, micaceous; glauconite	37	246	889-926

Description	Thickness in feet: Interval	Cumulative	Feet above base
abundant in a few beds, scarce to absent in rest; silty and slightly micaceous, silt mostly detrital feldspar, some authigenic overgrowth, a few rhombs, some quartz; some intraformational conglomerate; mudball-like objects in a few beds; bedding wavy, beds mostly 2 to 12 inches, alternating thinner and thicker bedded zones, individual beds very persistent laterally.			
Fossils collected by Ellinwood from 889 feet, Angulotreta sp., linguloid type B, Eoorthis indianola (Walcott), Eoorthis remnicha (Winchell), Homagnostus tumidosus (Hall and Whitfield), Comanchia amplooculata (Frederickson), Dellea? punctata Palmer, Irvingella major Ulrich and Resser, aff. Morosa n. sp., Parabolinoides contractus Frederickson, and Sulcocephalus candidus (Resser); from 891 feet, Angulotreta microscopica (Shumard), Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), var. A Longacre, and Pelagiella sp.; from 895 feet, Angulotreta sp., Pseudodicellomus sp., Billingsella aff. B. texana Bell, Huenella abnormis (Walcott), Conaspis leptoholcus Longacre, Conaspis testudinatus Ellinwood, Orygmaspis llanoensis (Walcott), and Wilbernia halli Resser, var. A, Ellinwood; from 896 feet, Orygmaspis llanoensis (Walcott); from 901.5 feet, Angulotreta sp., Pseudodicellomus mosaicus (Bell), Billingsella texana Bell, and Taenicephalus shumardi (Hall); from 906.5 feet, Billingsella texana Bell; from 910 feet, Angulotreta sp., linguloid type B, Billingsella texana Bell, and Taenicephalus sp; from 913.5 feet, Angulotreta sp., linguloid type B, Billingsella texana Bell, Pseudagnostus cf. P. communis (Hall and Whitfield), Taenicephalus shumardi (Hall), and Wilbernia expansa Frederickson.			
Fossils collected by Bell from 890 feet, Angulotreta sp., Angulotreta			

	Thickness in feet		
	Interval	Cumulative	Feet above base
microscopica (Shumard), linguloid type B, Eoorthis indianola (Walcott), Eoorthis remnicha (Winchell), Comanchia amplooculata (Frederickson), and Irvingella major Ulrich and Resser; from 898 feet, Angulotreta sp., Pseudodicellomus sp., Billingsella texana Bell, Huenella abnormis (Walcott), Orygmaspis llanoensis (Walcott), Taenicephalus shumardi (Hall), and Wilbernia halli Resser; from 912 feet, Angulotreta sp., linguloid type B, Billingsella texana Bell, Taenicephalus sp., and Wilbernia expansa Frederickson; from 917 feet, Angulotreta sp., linguloid type B, aglaspid? fragment, Sinuella minuta Knight, Billingsella texana Bell, Huenella texana (Walcott), Pseudagnostus cf. P. communis (Hall and Whitfield), Maustonia cf. M. hedra Kurtz, Saratogia americana (Lochman and Hu), Taenicephalus sp., and Wilbernia expansa Frederickson; from 925 feet, Angulotreta sp., linguloid type B, Idahoia lirae (Frederickson), and Saratogia fria Lochman and Hu.			
Fossils collected by Wilson from 891 feet, Angulotreta microscopica (Shumard), Ceratreta hebes Bell, Billingsella coloradoensis (Shumard), and Orygmaspis llanoensis (Walcott), var. A Longacre; from 893 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), spicules, Billingsella aff. B. texana Bell, and Orygmaspis llanoensis (Walcott).			
11. Limestone--mostly coarse-grained, a few medium- and fine-grained beds; in upper part mostly very light olive gray and yellowish gray, in lower part pale yellowish brown and light olive gray, somewhat speckled dark yellowish orange and moderate yellowish brown; glauconitic; silty and slightly micaceous, silt mostly detrital feldspar, much authigenic overgrowth	39	285	850-889

Description	Thickness in feet: Interval	Cumulative	Feet above base
numerous rhombs in lower part, less overgrowth and fewer rhombs upward, some quartz; dolomite rhombs common, a few hand-size and large patches along bedding, very fine grained, moderate yellowish-brown; intraformational conglomerate with mudball-like pebbles, scarce; bedding wavy, beds up to 12 inches, individual beds very persistent laterally, thinner bedded zones recessive; stylolites common.			
Fossils collected by Wilson from 855 feet, Linnarssonella girtyi Walcott, Elvinia roemeri (Shumard), Iddingsia robusta (Walcott), and Kindbladia wichitaensis (Resser); from 862 feet, Linnarssonella girtyi Walcott, Elvinia roemeri (Shumard), and Pterocephalia sanctisabae Roemer; from 870 feet, Linnarssonella girtyi Walcott, linguloid frag., Burnetiella urania (Walcott), Camaraspis convexa (Whitfield), Dellea suada (Walcott), Dokimocephalus intermedius (Resser), and Elvinia roemeri (Shumard); from 874 feet, Linnarssonella girtyi Walcott and Dellea suada (Walcott); from 878 feet, Linnarssonella girtyi Walcott, spicule type B, pelmatozoan columnals, Elvinia roemeri (Shumard), and Dellea aff. D. snoburgensis (Wilson); from 882 feet, Linnarssonella girtyi Walcott, and pelmatozoan columnal; from 884 feet, Linnarssonella girtyi Walcott, linguloid fragments, Camaraspis convexa (Whitfield), Dokimocephalus intermedius (Resser), Elvina roemeri (Shumard), Morosa? bothra Stitt, and Pterocephalia sanctisabae Roemer.			
Fossils collected by Bell from 855 feet, Linnarssonella girtyi Walcott, Kindbladia sp., and Plataspella anatina (Resser); from 862 feet, Linnarssonella girtyi Walcott, linguloid type B, pelmatozoan columnals,			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Homagnostus tumidosus (Hall and Whitfield), Elvinia roemeri (Shumard), Irvingella major Ulrich and Resser, Kindbladia wichitaensis (Resser), and Pterocephalia sanctisabae Roemer; from 870 feet, Linnarssonella girtyi Walcott, linguloids types A and B, Elvinia roemeri (Shumard), and Kindbladia affinis (Walcott); from 876 feet, Linnarssonella girtyi Walcott, Camaraspis convexa (Whitfield), Deckera completa Wilson, Dellea suada (Walcott), Dokimocephalus intermedius (Resser), Elvinia sp., Dellea snoburgensis (Wilson), and Iddingsia robusta (Walcott); from 866 feet, Linnarssonella girtyi Walcott, Angulotreta sp., and linguloid.			
12. Limestone--very coarse grained; pale to dark yellowish-brown, speckled and mottled grayish-red and light-brown; glauconitic; sandy at base to slightly sandy at top, sand fine to coarse in lower sample to fine in upper sample, some very fine sand and silt, mostly quartz, some detrital feldspar, mostly microcline, a little authigenic overgrowth; bedding wavy, beds mostly about 6 inches, massive where not weathered; solution joints extend through interval; stylolites common.	15	300	835-850
Trilobites common especially in upper part.			
SHIFT 250 feet westward along beds; continue down in section southward.			
13. Limestone--very coarse grained; moderate-red to moderate-brown, speckled dark yellowish-orange; very sandy at base, less sandy upward, sand medium to very coarse, somewhat finer upward, well-rounded to spherical, rough from reconstitution, mostly quartz, in very fine sand and silt sizes, some detrital	10	310	825-835

Description	Thickness in feet: Interval	Cumulative	Feet above base
feldspar with authigenic overgrowth, a few rhombs; massive, beds up to 5 feet.			
Welge Sandstone Member: 11 feet thick			
14. Sandstone--medium- to coarse-grained, some fine-grained; grayish-orange to moderate yellowish-brown, greenish-gray where glauconitic; glauconitic except near middle; calcareous throughout; grains well-rounded to spherical, very rough from reconstitution, some grains show crescentic impact marks; slightly silty, silt mostly quartz, some detrital feldspar; massive, beds 1 to 3 feet, this and overlying unit form scarp.	11	321	814-825
Fossils collected by Bell from 815 feet, Linnarssonella girtyi Walcott linguloid type A, Elburgia aff. E. granulosa (Hall and Whitfield), Elvinia roemeri (Shumard), Pseudosaratogia aff. P. magna Wilson; from 820 feet, linguloid fragments, Homagnostus tumidosus (Hall and Whitfield), Elburgia aff. E. granulosa (Hall and Whitfield); from 822 feet, linguloid fragments, Homagnostus tumidosus (Hall and Whitfield, Camaraspis aff. C. convexa (Whitfield), and Elvinia roemeri (Shumard).			
Fossils collected by Wollman from 816 feet, Dunderbergia n. sp. 1, Elvinia roemeri (Shumard), Pseudosaratogia aff. P. magna Wilson, and Pterocephalia sanctisabae Roemer.			
Fossils collected by Wilson from 817 feet, linguloid fragments, Camaraspis convexa (Whitfield), Elburgia aff. E. granulosa (Hall and Whitfield), Pseudosaratogia aff. P. magna Wilson; from 818.5 feet, Linnarssonella girtyi Walcott, linguloid type A, Camaraspis convexa			

Description	Thickness in feet: Interval	Cumulative	Feet above base
(Whitfield), Dunderbergia n. sp. 1, and Elvinia roemeri (Shumard).			
Riley Formation: 814 feet thick Lion Mountain Sandstone Member: 41 feet thick			
15. Sandstone and greensand--greensand more than half quartz, rest mostly glauconite and calcite; dusky green to grayish-green; friable; quartz grains well-rounded to spherical, rough from reconstitution. Sandstone medium to very coarse grained, a few granules up to 0.25 inch in bottom bed; light gray to very light olive-gray; very calcareous; glauconitic; an 8-inch bed at bottom of interval, a 4-inch bed below middle, a 1.5-foot bed at top. Phosphatic brachiopods common; from 807 to 809 feet, linguloids and trilobites. Fossils collected by Bell from 804 feet, Apsotreta expansa Palmer and linguloids types A and B; from 808 feet, Apsotreta expansa Palmer, linguloids types A and B, dunderbergid?, Pterocephalia aff P. elongata Palmer. Fossils collected by Palmer at 805 and 808 feet, Apsotreta expansa Palmer.	10	331	804-814
16. Sandstone and limestone--sandstone most abundant in upper half, fine to very coarse grained; in part very glauconitic verging on greensand; quartz grains mostly well-rounded to spherical, rough from reconstitution, a few grains composite, silt mostly devoid of feldspar; very poorly exposed. Limestone most abundant in lower half, coarse grained, mostly ledges, light olive-gray and greenish-gray, glauconitic, sandy; some cross-beds of trilobite coquinite; sand mostly fine to medium, some silt. Fossils collected by Sheppard from 773 feet, linguloids types A and B,	31	362	773-804

Description	Thickness in feet: Interval	Cumulative	Feet above base
Aphelaspis conveximarginatus (Palmer), and Dunderbergia n. sp. 2; from 776 feet, paterinid, linguloids types A and B, aphelaspid, Aphelaspis conveximarginatus (Palmer), and Dunderbergia aff. D. n. sp. 2; from 784 feet, Apsotreta expansa Palmer, linguloids types A and B, and Dytremacephalus granulosus Palmer.			
Fossils collected by Palmer from 775 feet, Aphelaspis conveximarginata (Palmer) and Dunderbergia sp.; from 779 feet, Angulotreta triangularis Palmer, linguloid type B, and Dunderbergia n. sp. 2; from 784 feet, Apsotreta expansa Palmer; from 795 feet, Dunderbergia variagranula Palmer, Dytremacephalus granulosus Palmer, ?Sigmocheilus sigmoidalis (Palmer), Pterocephalia concava Palmer, Apsotreta expansa Palmer, and Dunderbergia aff. D. n. sp. 2.			
Fossils collected by Bell from 782 feet, Angulotreta triangularis Palmer, linguloid type B, linguloid, Blandicephalus texanus Palmer, Dunderbergia n. sp. 2, and Dytremacephalus sp.; from 783 feet, aff. Angulotreta triangularis Palmer, aff. Apsotreta expansa Palmer, linguloids types A and B, Blandicephalus texanus Palmer, Dunderbergia n. sp. 2, and Dytremacephalus granulosus Palmer; from 794 feet, Apsotreta expansa Palmer, linguloids types A and B, Dytremacephalus granulosus Palmer, and ?Sigmocheilus sigmoidalis (Palmer).			
Fossils collected by Wilson from 800 feet, Apsotreta expansa Palmer, linguloids types A and B, dunderbergids, Dytremacephalus granulosus Palmer, and Pterocephalia cf. P. concava Palmer.			
Cap Mountain Limestone Member: 497 feet thick			
17. Limestone--mostly coarse grained, some fine grained, greenish-gray to light	38	400	735-773

Description	Thickness in feet: Interval	Cumulative	Feet above base
olive-gray and yellowish-gray, glauconitic; some very fine grained from 755 to 765 feet, brownish-gray and pale yellowish-brown, verges on siltstone, very glauconitic and fossiliferous; a few off-white lenses of trilobite coquinite; covered from 737 to 742 feet, except 150 feet east of section where top few inches is very glauconitic, sandy, and friable; some fine sand and much very fine sand and silt above 750 feet, some very fine sand and silt and much fine to medium sand below 750 feet, very fine sand and silt about equally quartz and detrital feldspar, some authigenic overgrowth, rhombs scarce; bedding wavy, beds fairly thin, weather to rectangular and lenticular blocks; stylolites common.			
Fossils collected by Sheppard from 751 feet, Angulotreta triangularis digitalis Palmer, aphelaspids, Glaphyraspis cf. G. ornata (Lochman); from 751.5 feet, Angulotreta triangularis Palmer, Angulotreta triangularis digitalis Palmer, aphelaspids, Glaphyraspis ornata (Lochman), and Listroa longifrons (Palmer); from 753 feet, Angulotreta triangularis Palmer, linguloid type B, Homagnostus tumidosus (Hall and Whitfield), and aphelaspids; from 755 feet, Angulotreta triangularis Palmer, linguloid type A, aphelaspids?, and Listroa longifrons (Palmer); from 755.5 feet, Angulotreta triangularis Palmer, linguloid type A, Pseudagnostus cf. P. communis (Hall and Whitfield), Listroa longifrons (Palmer), and aphelaspids; from 756 feet, Angulotreta triangularis Palmer, linguloid type A, Psuedagnostus cf. P. communis (Hall and Whitfield), Dunderbergia sp., Listroa longifrons (Palmer), and aphelaspids; from 758 feet, Angulotreta triangularis Palmer, linguloids types A and B, paterinid,			

Description	Thickness in feet: Interval	Cumulative	Feet above base
and Listroa longifrons (Palmer); from 765 feet, Angulotreta triangularis Palmer, linguloids types A and B, Psuedagnostus cf. P. communis (Hall and Whitfield), aphelaspids, and Dytremacephalus laevis Palmer; from 766 feet, Angulotreta triangularis Palmer, linguloids types A and B, Homagnostus tumidosus (Hall and Whitfield), aphelaspid, Dunderbergia nitida (Hall and Whitfield), and strange pygidia; from 769 feet, Angulotreta triangularis Palmer, linguloids types A and B, aphelaspids, and Taenora? platifrons (Palmer).			
Fossils collected by Palmer from 750 and 751 feet, Aphelaspis walcotti Resser, Glaphyraspis ornata (Lochman), and Angulotreta triangularis digitalis Palmer, and in addition from 750 feet, Dictyonina perforata Palmer, and paterinid; from 756 feet, Angulotreta triangularis Palmer and linguloid type A; from 764 feet, Angulotreta triangularis Palmer and linguloid type B; from 771 feet, Aphelaspis walcotti Resser and Taenora platifrons (Palmer).			
Fossils collected by Bell from 767 feet, Angulotreta triangularis Palmer, linguloid type B, and Dytremacephalus n. sp. 1.			
18. Limestone--mostly medium- to fine-grained, a few coarse-grained beds; very light olive gray and yellowish gray, some greenish-gray, a few pale to dark yellowish-orange specks and mottles; in part oolitic, ooids especially abundant near 725 feet; glauconitic; silt and very fine sand common, some fine sand from 700 to 710 feet, a few grains in top sample, a few medium grains from 700 to 705 feet, sand and silt mostly quartz, abundant detrital feldspar, some authigenic overgrowth,	58	458	677-735

Description	Thickness in feet: Interval	Cumulative	Feet above base
a few rhombs; dolomite rhombs and replacement common; bedding wavy, massive, beds a few inches to several feet; stylolites abundant; vertical solution joints common. Trilobite fragments common; well-preserved trilobites at 677, 704, and 706 feet. Fossils collected by Palmer from 677 feet, Meteoraspis metra (Walcott) and spicule type B; from 695 feet, Llanoaspis modesta (Lochman) and spicule type B; from 704 feet, spicule type B; from 706 feet, Kingstonia (Ucebia) pontotocensis (Lochman), Llanoaspis undulata Lochman, Coosina cf. C. ariston (Walcott), Tricrepicephalus thoosa (Walcott), and Opisthotreta depressa Palmer; from 725 feet, Opisthotreta depressa Palmer and spicule type B. Fossils collected by Bell from 704 feet, Coosina cf. C. ariston (Walcott).			
19. Limestone--fine- to medium-grained, yellowish-gray to light olive-gray, much speckled and mottled moderate yellowish-brown and dark yellowish-orange; in part oolitic; glauconitic; a few dolomite rhombs, much dolomite replacement; slightly silty, some very fine sand, silt and sand about equally quartz and detrital feldspar, some authigenic overgrowth, a few rhombs; bedding somewhat wavy, beds not well-defined, mostly 1 to 2 feet. Orthid and oboloid(?) brachiopods common at 655 feet at a point 900 feet west of section. Fossils collected by Bell from 655 feet, spicule type B, Opisthotreta depressa Palmer, linguloid, Diraphora sp., Kormagnostus simplex Resser, and	25	483	652-677

Description	Thickness in feet: Interval	Cumulative	Feet above base
Coosella cf. C. granulosa Rasetti. Fossils collected by Palmer from 653 feet, Diraphora sp., Opisthotreta depressa Palmer, Kinsabia variegata Lochman, and spicule type B; from 655 feet, Kormagnostus simplex Resser, Meteoraspis metra (Walcott), Tricrephicephalus texanus (Shumard), Diraphora sp., and spicule type B.			
20. Limestone and siltstone--limestone, very fine grained, very silty, siltstone, very calcareous; yellowish-gray, light olive-gray, greenish-gray, pale yellowish-brown, grayish orange-pink, pale-red, mottled; glauconitic; residue mostly silt and very fine sand, silt and sand about equally quartz and detrital feldspar, some authigenic overgrowth, rhombs scarce; bedding wavy to crinkly, beds massive, weathers to porous, honeycombed, dark-brown masses. Fossils collected by Bell from 630 feet, linguloid fragments, Opisthotreta depressa Palmer, spicule type B, Kinsabia variegata Lochman, and Diraphora sp.	22	505	630-652
SHIFT about 900 feet westward along beds; continue down in section westward to 620 feet, then southward.			
21. Limestone--coarse-grained, light olive-gray speckled grayish-red, in part oolitic, in part glauconitic, beds 6 to 12 inches. Calcareous brachiopods and trilobites common; on top surface phosphatic brachiopods. Fossils collected by Palmer from 628 feet, Coosella beltensis Lochman, Kingstonia (Ucebia) pontotocensis (Lochman), Llanoaspis virginica (Resser), Meteroraspis metra (Walcott), Pseudagnostina nordicus (Lochman), Tricrepicephalus thoosa (Walcott),	2	507	628-630

Description	Thickness in feet: Interval	Cumulative	Feet above base
Tricrepicephalus texanus (Shumard), Diraphora sp., and Opisthotreta depressa Palmer. Fossils collected by Bell from 628 feet, Opisthotreta depressa Palmer, Kinsabia variegata Lochman, linguloid type B, Diraphora sp., Arcuolimbus cf. A. convexus Palmer, Coosella sp., and Tricrepicephalus thoosa (Walcott).			
22. Siltstone and limestone--mostly siltstone, very calcareous, some limestone, very silty, light to very light olive gray, grayish-orange, grayish orange-pink, light-brown, moderate yellowish-brown, reddish-orange, mottling less pronounced above 592 feet; glauconitic, grains silt size; silt in part verging on very fine sand, mostly detrital feldspar, some overgrowth, a few rhombs, quartz abundant; massive, poorly exposed; upon weathering leaches to porous, siltstone blocks.	42	549	586-628
23. Limestone--mostly fine-grained, some coarse-grained; mostly light to very light olive gray, upper sample very light gray, mottled dark yellowish-orange, some grayish-red; glauconite abundant in bottom bed, scarce elsewhere; silt in part verging on very fine sand common, mostly brown, detrital feldspar, some authigenic overgrowth, numerous rhombs, abundant quartz; bedding wavy, beds massive; abundant solution joints several feet wide. The rock in this interval is attractive and might be of use for building stone. Fossils collected by Palmer from 561 feet, Kinsabia variegata Lochman and spicule type B; from 565 feet, Diraphora sp., Kinsabia variegata Lochman, and spicule type B; from 582 feet, Coosia connata (Walcott),	26	575	560-586

Description	Thickness in feet: Interval	Cumulative	Feet above base
Opisthotreta depressa Palmer, and Kinsabia variegata Lochman; from 586 feet, Tricrepicephalus texanus (Shumard), Opisthotreta depressa Palmer, and Kinsabia variegata Lochman.			
Fossils collected by Bell from 560 feet, linguloid, Kinsabia variegata Lochman spicule type B, Coosella cf. C. granulosa Rasetti, Tricrepicephalus texanus (Shumard), and hyolithid.			
SHIFT southward 300 feet across Anderson Hollow using a glauconitic, phosphatic brachiopod-bearing bed, follow bed 300 feet around west side of ridge, continue down in section westward.			
24. Limestone--fine-grained; yellowish-gray to light olive-gray, speckled and mottled yellowish-orange and grayish-orange; mostly oolitic, ooids scarce in lower 6 feet; glauconitic; silt in part verging on very fine sand common, very fine to medium sand from 545 to 550 feet, silt and sand mostly brown, detrital feldspar, some authigenic overgrowth, rhombs common, quartz common; wavy bedding weathers in relief, beds mostly 6 to 12 inches, a 3-foot bed at top.	20	595	540-560
Phosphatic brachiopods common on top surface; at 560 feet, oboloids(?), Tricrepicephalus sp.			
SHIFT 900 feet southward along base of 12-inch oolite bed at 495 feet; continue down in section southward. Both segments are laid off in 5-foot intervals between 495 and 540 feet; the best exposures are to the east.			
25. Limestone--fine-grained, light olive-gray speckled and mottled grayish-orange and moderate yellowish-brown; glauconite scarce, mostly large grains; oolitic; silt and very fine	16	611	524-540

Description	Thickness in feet: Interval	Cumulative	Feet above base
sand common, some fine to medium sand in top sample, sand and silt mostly brown, detrital feldspar, some authigenic overgrowth, rhombs numerous, quartz abundant; wavy bedding weathers in relief, nodular where deeply weathered, fresh exposures massive; solution joints 2 to 6 feet wide, near edge of bluff several feet deep.			
26. Limestone--fine-grained; grayish-orange, pale brown, pale yellowish-brown, some grayish-red from 505 to 510 feet; bottom foot very oolitic, ooids moderate yellowish-brown in pale yellowish-brown matrix, one bed; glauconitic; sand very abundant, mostly very fine to medium, some coarse from 505 to 515 feet, slightly silty; very silty from 500 to 505 feet, silt and very fine sand mostly quartz, some brown, detrital feldspar; a few rhombs, heavy minerals abundant; fossils scarce. From 496 to 501 feet, recessive, poorly exposed; from 501 to 505 feet, somewhat oolitic, beds 2 to 12 inches; from 505 to 524 feet, mottled, oolitic, sand in red beds coated by bronzy iron oxide, solution pitted, wavy bedded, massive, small cross-beds common, a few wide solution joints.	29	640	495-524
The top of this interval marks a change from very sandy limestone below to sparsely sandy limestone above, and might correspond to the boundary between the Cap Mountain Limestone and Hickory Sandstone used by Paige (1912).			
SHIFT 200 feet southeastward along base of 12-inch oolitic bed at 495 feet; continue down in section southward down bluff.			
27. Limestone--fine-grained; grayish-orange, grayish-brown, dark yellowish-brown, pale brown, grayish-red, yellowish-gray, dark yellowish-orange, and grayish orange-pink in various combinations of	73	713	422-495

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	speckling and mottling; oolitic at 488 feet; glauconitic; abundant sand, mostly very fine to medium, very fine to fine from 422 to 430, 435 to 440, and 475 to 480 feet, a few coarse grains from 430 to 435 and 440 to 475 feet, mostly slightly silty, very little silt from 440 to 445 and 475 to 485 feet; silt and very fine sand mostly quartz, feldspar scarce except in finer fractions where it is abundant in some samples, mostly brown, detrital, some authigenic overgrowth, a few rhombs, heavy minerals abundant. From 422 to 465 and 475 to 491 feet, fairly distinctly bedded, beds mostly 4 to 12 inches, small cross-beds very common, some beds minutely crinkled, others solution pitted; from 465 to 467 and 491 to 495 feet, recessive, lower interval much burrowed; from 467 to 470 feet, 6-inch beds; from 470 to 475 feet, mottled, massive, crinkly bedded, solution pitted, forms lip of bluff. Fossils scarce; numerous phosphatic brachiopod fragments in top 4 feet. Fossils collected by Bell from 444 feet, cf. Dicellomus sp. Fossils collected by Palmer from 460 feet, Cedaria eurycheilos Palmer, Kormagnostus simplex Resser, and Menomonia sp.			
28.	Limestone--fine- to coarse-grained, upper 5 feet grayish-red, rest pale to dark yellowish-brown and pale brown, mottled; glauconitic; sand in upper part fine to medium, a few coarse grains, a few medium and coarse grains from 405 to 410 feet, very fine to medium abundant in lower sample, silt common except in upper sample, abundant from 405 to 410 feet, silt and very fine sand mostly quartz, abundant brown, detrital feldspar, some authigenic overgrowth, a few clear rhombs; bedding wavy, some small cross-beds, massive, forms a smooth surface difficult to sample.	22	735	400-422

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils scarce, a few trilobite fragments.			
SHIFT about 1,000 feet eastward along beds; continue down in section southward.			
29. Limestone, sandstone, and siltstone--limestone fine- to coarse-grained; very light to light olive gray and dark to pale yellowish-brown, speckled and mottled moderate yellowish-brown, some dark yellowish-orange; slightly to very sandy. Sandstone mostly very fine to fine grained, moderate-brown to moderate yellowish-brown, speckled dark yellowish-orange, very calcareous. Siltstone mostly in upper sample, light grayish-orange. Residue mostly sand very fine to fine, a few medium grains in upper sample and lower half, a few coarse to very coarse grains in lower sample, mostly slightly silty; silt abundant from 375 to 380 feet and in top sample, silt and very fine sand mostly quartz, abundant brown, detrital feldspar, some authigenic overgrowth, heavy minerals common; glauconite scarce; bedding wavy, mostly massive, a few beds 2 feet or more, a few as thin as 4 inches.	33	768	367-400
Fossils scarce.			
30. Limestone and sandstone--very sandy limestone to very calcareous sandstone; fine-to coarse-grained, pale to dark yellowish-brown and pale-brown; slightly glauconitic; residue mostly sand, very fine to coarse, some very coarse from 345 to 350 feet, grains subrounded to rounded, a few larger ones well-rounded to spherical; silt scarce, very fine sand and silt mostly quartz, some brown, detrital feldspar, some authigenic overgrowth, heavy minerals common; beds 2 to 24 inches, upper part poorly exposed.	26	794	341-367

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected by Palmer from 341 feet, Bolaspidella wellsvillensis (Lochman and Denson); from 365 feet, ?Angulotreta postapicalis Palmer.			
31. Sandstone and limestone--mostly sandstone, calcareous; some limestone, sandy, oolitic; pale to dark yellowish-brown, 4-inch beds at 328 and 340 feet and thinner ones elsewhere, grayish-red; slightly glauconitic; sand mostly fine to very coarse, middle sample fine to very fine, a few granules from 329 to 330 feet, silt scarce, very fine sand and silt mostly quartz, some brown, detrital feldspar; rather massive, some small cross-beds.	16	810	325-341
Phosphatic brachiopods scarce.			
32. Sandstone--mostly fine to very coarse grained, some very fine grained in upper sample, a few granules; alternating beds of yellowish-brown and pale-brown, mottled; very calcareous; glauconitic; massive, cross-beds common in upper part.	13	823	312-325
Phosphatic brachiopods common from 316 to 317 feet.			
SHIFT 100 feet eastward along beds; continue down in section southward.			
33. Sandstone--alternating beds of very fine grained, silty and fine- to coarse-grained; dark yellowish-brown; calcareous; very poorly exposed in line of section, well-exposed 100 yards to east in Red Bluff.	8	831	304-312
A few phosphatic brachiopods.			
34. Sandstone--upper 20 feet mostly very fine to fine grained, some medium-grained in upper sample, silt abundant from 290 to 300 feet, scarce above and below; lower 2 samples fine- to coarse-	28	859	276-304

Description	Thickness in feet: Interval	Cumulative	Feet above base
grained, very little silt; mostly between moderate yellowish-brown and pale to dark yellowish-brown, top bed grayish-brown; calcareous, most so upward; glauconitic; very fine sand and silt mostly quartz, some detrital feldspar, clear to brown, in part microcline, very little authigenic overgrowth. Pelmatozoan columnals and phosphatic brachiopods in top bed; phosphatic brachiopod fragments common at other levels.			
Hickory Sandstone Member: 276 feet thick			
35. Sandstone and siltstone--mostly sandstone, mostly very fine to medium grained, lower two samples fine to very coarse grained, grains reconstituted; mostly yellowish-brown; silt mostly abundant, scarce in bottom sample and from 265 to 270 feet, very fine sand and silt mostly quartz, detrital feldspar abundant, in part microcline, heavy minerals abundant; slightly glauconitic; near middle slightly calcareous; friable, away from Red Bluff forms a sandy flat; beds less than an inch to about 8 inches, a resistant ledge from 264 to 266 feet. Some siltstone, moderate yellowish-brown, argillaceous, micaceous. Trilobite and phosphatic brachiopod fragments common. Fossils collected by Bell from 248 feet, linguloids, *Dicellomus* sp., and ?*Modocia* sp. Fossils collected by Palmer from 247 and 252 feet, *Modocia centralis*? (Whitfield); from 252 and 270 feet, *Bolaspidella wellsvillensis* (Lochman and Denson).	36	895	240-276
SHIFT about 250 feet upstream eastward along top of red bed; continue down in section upstream along west bank of Zigzag Creek.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Zigzag Creek erroneously shown as Middle Creek on geologic map of White Creek area (Part 1, Pl. 7, fig. 24).			
36. Sandstone--fine to very coarse grained, a few granules; mostly moderate yellowish-brown, top 2-foot bed grayish-red, contains 0.5-inch siltstone pebbles, top surface ripple-marked, 1 foot between crests, trend N. 20° E.; sand reconstituted; from 233 to 235 feet, one bed; from 235 to 236 feet, covered; from 236 to 238 feet, slightly glauconitic, ripple-marked, 8 to 10 inches between crests.	7	902	233-240
Phosphatic brachiopods common in top bed.			
37. Siltstone--dark yellowish-brown, very argillaceous, sandy, weathered.	3	905	230-233
38. Sandstone--coarse to very coarse grained, some granules; moderate yellowish-brown; slightly glauconitic; grains spherical, very rough from reconstitution; beds 1 foot and less.	3	908	227-230
39. Covered.	4	912	233-227
40. Sandstone--medium to very coarse grained, some granules; moderate yellowish-brown to dark yellowish-brown; glauconitic at 216 feet; silt pebbles common; grains mostly quartz, spherical, very rough from reconstitution; beds 1 foot and less.	8	920	215-223
Phosphatic brachiopods common.			
SHIFT about 130 feet southward along beds; continue down in section eastward.			
41. Sandstone--medium to very coarse grained, a few granules; grayish-orange to dark yellowish-brown and very dusky red to blackish-red; silty, siltstone pebbles in a few beds; grains spherical, very rough from reconstitution; a few ripple marks; beds mostly a foot and less.	15	935	200-215

Description	Thickness in feet: Interval	Cumulative	Feet above base
Phosphatic brachiopods common.			
SHIFT about 300 feet southward along beds crossing fence onto West ranch; continue down in section eastward to flood plain.			
42. Sandstone--medium to very coarse grained, some fine-grained; mostly very dusky red, some grayish-red in top and bottom samples; a bed of intraformational conglomerate in lower part with 0.5-inch silty, sandstone pebbles; grains spherical, very rough from reconstitution; beds mostly 6 inches and less, top 5 feet one bed.	25	960	175-200
Fossils collected by Bell from 175 feet, linguloids; fragments of linguloids throughout.			
43. Sandstone--medium- to coarse-grained in top and bottom samples, rest mostly fine and medium to coarse and very coarse grained; yellowish-orange to pale yellowish-brown; in part silty and argillaceous, silt and very fine sand mostly quartz, a few rhombs of feldspar, microcline scarce; burrowed(?) from 164 to 167 and from 171 to 174 feet; larger grains spherical, very rough from reconstitution; massive and well-exposed from 150 to 156, 164 to 167, and 171 to 174 feet, rest thin-bedded, friable, recessive, mostly covered.	25	985	150-175
Fossils collected by Bell from 155 feet, linguloids.			
SHIFT 200 feet southward along beds; continue down in section along edge of flood plain.			
44. Sandstone and siltstone--mostly sandstone medium to very coarse grained, some fine-grained; yellowish-gray to grayish-yellow, some grayish orange-pink and pale yellowish-brown in upper part, some pale reddish-brown in bottom sample; larger grains in part spherical rough from reconstitution, in part	55	1,040	95-150

Description	Thickness in feet: Interval	Cumulative	Feet above base
angular to subrounded; silty, argillaceous; in part burrowed(?); beds with cuneiform markings common; quartzite beds scarce. Some siltstone, mostly sandy, argillaceous, microcline common. Very fine sand and silt mostly quartz, abundant feldspar, both detrital microcline and brown to clear rhombs.			
From 95 to 107 feet, massive; from 107 to 108 feet, recessive, beds 0.25 to 1 inch; from 108 to 112 feet, 2 beds with thin-bedded zone between; from 112 to 113 feet, recessive, thin-bedded; from 113 to 118 feet, beds up to 18 inches; from 118 to 130 feet, beds 0.5 to 6 inches; from 130 to 136 feet, beds up to 18 inches; from 136 to 145 feet, beds 0.5 to 8 inches, in part recessive; from 145 to 150 feet, massive, upper half one bed, burrowed(?).			
SHIFT about 500 feet southward along beds; continue down in section eastward.			
45. Sandstone and siltstone--sandstone fine to very coarse grained; upper part grayish-red, lower part pale-red; in part mottled and burrowed(?); silty; argillaceous; massive. Siltstone mostly near middle of interval, pale-red, very sandy, micaceous, argillaceous, feldspar scarce, thin-bedded, recessive.	15	1,055	80-95
SHIFT about 100 feet southward along beds continue down in section eastward.			
46. Sandstone--fine and medium to very coarse grained, some granules; grayish orange-pink to pale reddish-brown and moderate reddish-orange; a mottled, burrowed bed near top; silty, argillaceous; grains in part spherical, rough from reconstitution, in part angular; beds 1 to 3 feet.	18	1,073	62-80
47. Sandstone--fine to very coarse grained, many granules, some very fine grained, micaceous; grayish-orange to light-brown;	10	1,083	52-62

Description	Thickness in feet: Interval	Cumulative	Feet above base
granules mostly irregular, angular, medium to very coarse grains mostly spherical to well-rounded; cuneiform markings common in some beds; trails common; beds 6 to 12 inches, covered in line of section, exposed along strike to southwest.			
48. Sandstone--mostly fine to very coarse grained, granules abundant, very small pebbles in lower part, some very fine- to medium-grained, argillaceous, silty, with microcline and untwinned feldspar common; grayish-pink to pale-red, grayish-orange to grayish orange-pink; cuneiform markings in top bed; grains mostly subrounded to angular in lower part, better rounded to spherical in upper part, some reconstitution; massive, many cross-beds.	32	1,115	20-52
SHIFT about 100 feet southward along beds, continue down in section eastward.			
49. Sandstone--medium to very coarse grained, many granules, a few pebbles up to 0.75 inch; grayish-orange to yellowish-brown, moderate reddish-orange; microcline common; grains subrounded to angular, some reconstitution; massive, numerous cross-bed sets up to 2 feet thick.	20	1,135	0-20

Table 43. Heavy mineral frequency counts, White Creek section, Blanco County, Texas (counts made by T. R. Walker).

Member	Sample Interval (feet)	Zircon					Tourmaline				
		Total	Clear	Zoned	Dusty	Malacon	Total	Brown	Green	Blue	Black
Point Peak	1,000-1,005	4.7	3.3	0.0	1.3	0.0	4.0	1.7	2.3	0.0	0.0
	980-985	19.7	13.7	0.7	2.7	2.7	0.3	0.3	0.0	0.0	0.0
	930-935	42.7	30.3	3.3	7.3	1.7	1.0	0.3	0.7	0.0	0.0
Welge Sandstone	820-825	8.3	8.3	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0
Lion Mountain Sandstone	800-805	2.3	1.3	0.0	1.0	0.0	0.3	0.3	0.0	0.0	0.0
Cap Mountain Limestone	760-765	7.0	4.3	1.0	1.7	0.0	0.3	0.0	0.0	0.3	0.0
	645-650	3.7	3.0	0.0	0.7	0.0	0.7	0.3	0.3	0.0	0.0
	620-625	12.7	9.7	0.3	2.7	0.0	0.0	0.0	0.0	0.0	0.0
	595-600	3.3	2.7	0.0	0.7	0.0	1.3	0.7	0.7	0.0	0.0
	570-575	14.7	10.7	0.7	3.3	0.0	1.0	0.3	0.7	0.0	0.0
	520-525	42.3	26.7	3.7	11.3	0.7	0.0	0.0	0.0	0.0	0.0
	490-495	23.7	15.0	1.0	6.0	1.7	1.0	0.3	0.7	0.0	0.0
	465-470	15.0	9.7	0.0	4.3	1.0	1.0	1.0	0.0	0.0	0.0
	435-440	47.0	31.0	1.0	11.7	3.3	1.0	0.7	0.3	0.0	0.0
	415-420	27.7	19.0	1.0	7.7	0.0	0.0	0.0	0.0	0.0	0.0
	395-400	26.3	13.7	0.7	9.7	2.3	1.7	0.7	1.0	0.0	0.0

Table 43 (continued)

Member	Sample Interval (feet)	Zircon					Tourmaline				
		Total	Clear	Zoned	Dusty	Malacon	Total	Brown	Green	Blue	Black
Cap Mountain Limestone	370-375	9.7	7.3	0.0	2.0	0.3	3.3	2.7	0.7	0.0	0.0
	345-350	21.7	14.0	1.3	5.7	0.7	2.0	1.3	0.7	0.0	0.0
	320-325	10.3	6.0	0.3	3.3	0.7	2.3	1.3	0.7	0.0	0.3
	295-300	74.7	48.7	4.0	18.3	3.7	3.7	2.0	1.7	0.0	0.0
Hickory Sandstone	270-275	15.3	9.3	0.7	5.3	0.0	2.7	0.3	2.3	0.0	0.0
	250-255	36.3	22.3	2.3	11.3	0.3	2.7	1.7	1.0	0.0	0.0
	220-225	11.7	6.3	1.0	4.3	0.0	1.7	0.7	0.7	0.3	0.0
	180-185	32.0	15.0	3.0	13.3	0.7	17.3	11.7	4.3	0.0	1.3
	165-170	26.0	17.7	1.0	7.0	0.3	9.3	6.7	2.7	0.0	0.0
	140-145	22.0	13.7	1.3	6.3	0.7	5.3	3.0	2.3	0.0	0.0
	120-125	26.3	15.3	1.3	8.3	1.3	4.7	2.3	2.0	0.0	0.3
	95-100	23.7	15.0	1.0	6.3	1.3	4.3	1.3	2.3	0.0	0.7
	70-75	20.7	13.0	0.3	7.0	0.3	1.3	0.3	1.0	0.0	0.0
	45-50	22.7	15.0	1.7	5.7	0.3	8.3	4.3	4.0	0.0	0.0
	25-30	28.3	17.0	1.7	9.0	0.7	6.7	3.7	2.0	0.0	1.0
	5-10	18.7	10.7	1.0	6.7	0.3	3.3	0.7	2.7	0.0	0.0

Table 43
(continued)

Member	Sample Interval (feet)	Garnet			Rutile			Other Minerals				
		Total	Colorless	Pink	Total	Amber	Foxy red	Anatase	Altered ilmenite	Leucoxene	Black opaque	Pyrite
Point Peak	1000-1005	1.7	1.7	0.0	4.0	4.0	0.0	2.7	46.0	11.0	26.0	0.0
	980-985	1.0	1.0	0.0	1.3	1.3	0.0	20.0	11.0	42.7	4.0	0.0
	930-935	1.3	0.3	1.0	6.3	6.3	0.0	4.0	8.0	32.7	4.0	0.0
Welge Sandstone	820-825	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.7	0.0	73.7	0.0
Lion Mountain Sandstone	800-805	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.7	0.3	76.0	0.0
Cap Mountain Limestone	760-765	0.3	0.3	0.0	0.3	0.3	0.0	1.3	42.7	2.7	45.3	0.0
	645-650	0.0	0.0	0.0	0.7	0.7	0.0	2.0	74.7	10.0	8.3	0.0
	620-625	0.3	0.3	0.0	1.3	1.3	0.0	15.7	2.7	67.0	0.3	0.0
	595-600	0.0	0.0	0.0	1.3	1.3	0.0	8.3	33.0	50.3	2.3	0.0
	570-575	0.3	0.3	0.0	1.7	1.7	0.0	3.3	34.7	37.0	4.0	0.0
	520-525	0.7	0.7	0.0	1.7	1.7	0.0	0.7	47.0	6.0	1.7	0.0
	490-495	0.3	0.3	0.0	1.0	1.0	0.0	5.0	43.3	22.7	3.0	0.0
	465-470	2.0	1.3	0.7	0.7	0.7	0.0	3.0	46.7	10.3	21.0	0.0
	435-440	0.0	0.0	0.0	1.7	1.7	0.0	16.3	9.0	23.3	1.7	0.0
	415-420	2.0	1.0	1.0	0.0	0.0	0.0	0.0	46.3	4.7	19.3	0.0
	395-400	1.3	1.3	0.0	0.7	0.7	0.0	5.3	17.7	21.0	26.0	0.0

Table 43 (continued)

Member	Sample Interval (feet)	Garnet			Rutile			Other Minerals				
		Total	Colorless	Pink	Total	Amber	Foxy red	Anatase	Altered Ilmenite	Leucoxene	Black opaque	Pyrite
Cap Mountain Limestone	370-375	0.0	0.0	0.0	1.3	1.3	0.0	3.7	32.7	17.7	31.7	0.0
	345-350	0.3	0.3	0.0	2.0	2.0	0.0	0.0	32.7	0.3	41.0	0.0
	320-325	0.3	0.3	0.0	0.7	0.7	0.0	2.0	44.3	11.3	29.0	0.0
	295-300	0.0	0.0	0.0	6.0	4.7	1.3	2.0	6.7	8.0	0.3	0.0
Hickory Sandstone	270-275	0.3	0.0	0.3	2.7	2.3	0.3	0.0	37.0	5.0	37.0	0.0
	250-255	0.0	0.0	0.0	5.0	4.7	0.3	0.3	25.7	19.7	10.3	0.0
	220-225	1.3	1.3	0.0	6.7	4.7	2.0	0.3	35.0	4.0	39.3	0.0
	180-185	1.3	0.7	0.7	2.3	1.7	0.7	0.0	28.7	8.7	9.7	0.0
	165-170	1.0	0.7	0.3	3.7	2.0	1.7	1.3	28.0	29.0	1.7	0.0
	140-145	1.0	0.7	0.3	3.7	3.0	0.7	2.7	52.0	12.3	1.0	0.0
	120-125	3.0	3.0	0.0	4.3	4.3	0.0	1.7	24.3	32.3	3.3	0.0
	95-100	0.3	0.0	0.3	1.0	1.0	0.0	0.3	62.0	5.7	2.7	0.0
	70-75	0.3	0.3	0.0	0.3	0.0	0.3	0.3	64.3	11.3	0.7	0.7
	45-50	0.7	0.7	0.0	1.3	1.3	0.0	0.7	62.0	4.0	0.3	0.0
	25-30	0.3	0.0	0.3	1.0	0.7	0.3	2.0	39.3	21.3	1.0	0.0
	5-10	1.0	0.3	0.7	1.7	1.3	0.3	0.7	64.0	7.3	3.3	0.0

Table 44. Insoluble residue content, White Creek section, Blanco County, Texas.

Feet above base	Percent residue	Feet above base	Percent residue	Feet above base	Percent residue
1,130-1,135	1.4	1,015-1,020	8.0	900-905	4.5
1,125-1,130	0.6	1,010-1,015	12.6	895-900	3.8
1,120-1,125	0.4	1,005-1,010	6.2	890-895	4.1
1,115-1,120	7.0	1,000-1,005	30.7	885-890	4.3
1,110-1,115	5.5	995-1,000	28.7	880-885	3.0
1,105-1,110	7.4	990-995	25.0	875-800	2.8
1,100-1,105	6.0	985-990	49.0	870-875	6.4
1,095-1,100	8.8	980-985	59.2	865-870	3.6
1,090-1,095	4.7	975-980	46.8	860-865	4.7
1,085-1,090	6.2	970-975	0.7	855-860	6.4
1,080-1,085	5.7	965-970	4.3	850-855	3.4
1,075-1,080	2.9	960-965	1.5	845-850	7.8
1,070-1,075	1.4	955-960	6.9	840-845	6.5
1,065-1,070	1.7	950-955	5.4	835-840	13.5
1,060-1,065	2.6	945-950	2.2	830-835	30.8
1,055-1,060	2.5	940-945	4.6	825-830	34.1
1,050-1,055	3.5	935-940	7.0	820-825	89.4
1,045-1,050	4.6	930-935	8.8	815-820	67.4
1,040-1,045	3.8	925-930	5.7	810-815	75.6
1,035-1,040	4.6	920-925	3.9	805-810	40.2
1,030-1,035	5.6	915-920	8.2	800-805	51.6
1,025-1,030	13.9	910-915	2.4	795-800	39.3
1,020-1,025	8.4	905-910	4.9	790-795	56.1

Table 44
(continued)

Feet above base	Percent residue	Feet above base	Percent residue	Feet above base	Percent residue
785-790	8.6	670-675	2.6	555-560	19.5
780-785	13.6	665-670	3.7	550-555	9.1
775-780	15.4	660-665	16.2	545-550	8.3
770-775	6.3	655-660	6.2	540-545	17.0
765-770	7.1	650-655	2.9	535-540	12.9
760-765	35.9	645-650	60.2	530-535	8.3
755-760	14.7	640-645	70.4	525-530	17.3
750-755	12.8	635-640	23.9	520-525	68.8
745-750	15.4	630-635	34.8	515-520	25.1
740-745	14.4	625-630	43.7	510-515	21.9
735-740	16.8	620-625	91.4	505-510	64.6
730-735	6.6	615-620	77.8	500-505	44.8
725-730	6.4	610-615	83.3	495-500	26.1
720-725	4.3	605-610	71.1	490-495	64.9
715-720	7.4	600-605	67.9	485-490	15.7
710-715	5.0	595-600	77.9	480-485	56.6
705-710	8.6	590-595	77.7	475-480	51.4
700-705	9.1	585-590	57.1	470-475	40.0
695-700	7.9	580-585	13.1	465-470	66.9
690-695	5.2	575-580	31.2	460-465	41.0
685-690	7.9	570-575	54.9	455-460	63.6
680-685	5.2	565-570	37.9	450-455	63.4
675-680	4.8	560-565	16.1	445-450	58.2

Table 44
(continued)

Feet above base	Percent residue	Feet above base	Percent residue	Feet above base	Percent residue
440-445	54.1	320-325	77.0	205-210	95.6
435-440	78.7	315-320	59.8	200-205	85.2
430-435	50.3	310-315	60.8	195-200	95.1
425-430	56.2	305-310	77.5	190-195	73.3
420-425	29.8	300-305	60.7	185-190	80.7
415-420	31.4	295-300	86.1	180-185	80.2
410-415	64.4	290-295	92.3	175-180	78.4
405-410	62.5	285-290	89.5	170-175	96.3
400-405	51.1	280-285	83.9	165-170	98.1
395-400	75.6	275-280	87.4	160-165	98.7
390-395	52.3	270-275	93.4	155-160	98.8
385-390	29.7	265-270	92.3	150-155	96.7
380-385	64.1	260-265	81.6	145-150	97.5
375-380	50.2	255-260	85.0	140-145	96.6
370-375	59.4	250-255	85.4	135-140	96.0
365-370	65.9	245-250	88.7	130-135	97.4
355-360	38.4	240-245	89.7	125-130	97.6
350-355	47.2	235-240	68.7	120-125	95.4
345-350	58.9	230-235	79.7	115-120	97.1
340-345	49.5	225-230	91.2	110-115	97.2
335-340	65.0	220-225	74.6	105-110	93.1
330-335	73.8	215-220	93.0	100-105	98.3
325-330	62.1	210-215	92.7	95-100	97.3

Table 44
(continued)

Feet above base	Percent residue	Feet above base	Percent residue
90-95	94.2	40-45	100.2
85-90	96.3	35-40	100.6
80-85	98.0	30-35	100.6
75-80	97.7	25-30	100.6
70-75	98.1	20-25	100.4
65-70	98.7	15-20	100.3
60-65	96.8	10-15	100.0
55-60	99.8	5-10	97.3
50-55	97.6	0-5	100.3
45-50	98.0		

Pedernales River--Sandy Post Office Area, Blanco County

Upstream Pedernales River Stratigraphic Section

The following description is abridged from Cloud and Barnes (1948). The section was measured by Barnes and Louis Dixon, February 1941. A fault somewhere near the top of the section cuts out about 255 feet of the San Saba Member of the Wilberns Formation. The line of section is shown on the Geologic Map of the Johnson City Quadrangle (Barnes, 1963, 1966).

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 210 feet measured			
Wilberns Formation: 210 feet measured			
San Saba Member: 195 feet measured			
Dolomitic facies: 195 feet measured			
19. Dolomite--microgranular, medium gray to yellowish-gray, medium bedded.	5	95	205-510
20. Dolomite--coarse-grained, light gray to flesh with some other colors such as yellowish-gray and beige, medium to thickly bedded.	10	105	195-205
Chert fine-grained, dirty brown, concretionary, occurs as 2 beds between Stations 17 and 18. At Station 18 similar chert in ½-inch sized fragments is common.			
21. Dolomite--coarse-grained, varying widely in color being predominantly light gray and pinkish-gray with abundant dull dark reddish-purple mottlings. Some of the dolomite is yellowish-gray to nutria in color and the bottom few feet is a medium dirty gray with an olive cast. The dolomite in this interval is massive with mostly irregular poorly developed bedding.	94	199	101-195
Chert is scarce with some reddish-brown chert at 173 feet in section.			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
22.	Chert--very fine grained minutely quartzose, brown with some black mottlings, occurs as a 2-foot discontinuous bed along an irregular contact between coarse-grained dolomite described above and medium- to fine-grained dolomite described below.	2	201	99-101
23.	Dolomite--fine-grained, yellowish-gray to beige with top 8 feet brownish-gray to nutria, whole interval mottled with specks of dull dark reddish-purple, medium to thickly bedded. Chert not developed in section, but on bluff to north the top 15 feet of the interval contains quartzose chert, dirty-white to rusty, porous to compact, fossiliferous. Silicified fossils are: Xenorthis sp., found elsewhere only in the basal part of the Upper Cambrian Frederick Limestone at Frederick, Maryland (Ulrich and Cooper, 1938, pp. 76, 77); Anconochilus barnesi Knight; Hypseloconus sp., Plethopeltis (?), and unidentified trilobite (16T-6-4A).	46	247	53-99
24.	Dolomite--fine-grained oolitic, beige to yellowish-gray, mottled with specks of dull dark reddish-purple, medium to thickly bedded.	15	262	38-53
25.	Dolomite--fine-grained, beige, mottled with specks of dull dark reddish-purple, medium to thickly bedded.	7	269	31-38
26.	Dolomite--fine-grained, brownish-gray to yellowish-gray in top part and brownish-gray to brown in lower part, medium-bedded, has ripple marks up to 24 inches from crest to crest and mud cracks, both in lower part. A small amount of glauconite is present. Station 3 (elevation 1133) is at 25 feet	16	285	15-31

Description	Thickness in feet: Interval	Cumulative	Feet above base
in section. This station was not recovered in 1944.			
Point Peak Member: 15 feet measured			
27. Argillaceous dolomitic limestone--fine-grained, brownish-gray to dark greenish-gray, glauconitic, occurs as 1/3 to 2-inch thick beds separated by thin laminae of green shale. Cross bedding and ripple marks are common.	11	296	4-15
28. Limestone--stromatolitic, subspherical masses up to 5 feet in diameter composed of very fine grained, light greenish-gray limestone with mottled greenish argillaceous inclusions mostly along stylolites. The stromatolite masses are separated by medium- to coarse-grained, light-gray to brown limestone. The stromatolitic biostrome appears to be slightly dolomitic throughout.	4	300	0-4

Klett-Walker Stratigraphic Section

The top of the section is within the San Saba Member near the edge of a flat about 650 feet N. 60° W. from the W. F. Walker ranch house and about 30 feet south of a wire gap. The bottom of the section is at the bottom of a prospect pit on the east bank of Pedernales River and on the Scott Klett ranch near a dome of coarse-grained, silicic granite, described by Barnes, Dawson, and Parkinson (1947, p. 51-52). The rest of the San Saba Member is present on the flat at the top of the section but is too poorly exposed to measure and describe. A geologic map of the Klett-Walker area is shown in Part 1, Pl. 7, fig. 25, and the section is also shown on the Geologic Maps of the Johnson City and Rocky Creek Quadrangles (Barnes, 1963, 1966).

The section was measured during February 1950 by Barnes and Ellinwood. Ellinwood collected fossils and chip-sampled the section in 5-foot intervals; the description is by Barnes. Barnes and Warren mapped the area in 1943. The fossil lists were updated by Bell during the period September to December 1969.

Thicknesses of units in the Klett-Walker section are as follows:

Stratigraphic unit	Thickness (feet)	Position above base of section (feet)
Moore Hollow Group (413 feet measured)		
Wilberns Formation (284 feet measured)		
San Saba Member (121 feet measured)		
Dolomitic facies	121+	292-413
Point Peak Member	25	267-292
Morgan Creek Limestone Member	126	141-267
Welge Sandstone Member	12	129-141
Riley Formation (129 feet)		
Lion Mountain Sandstone Member	31	98-129
Cap Mountain Limestone Member	98	0-98

Description of Section

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 413 feet described			
Wilberns Formation: 284 feet described			
San Saba Member: 121 feet described			
Dolomitic facies: 121 feet described			
1. Dolomite--coarse-grained; light yellowish gray; interstitial clay below 395 feet yellowish orange; above 395 feet,	34	34	379-413

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	moderate orange-pink; residue very scarce; massive, lower 7 feet faintly bedded; weathers to rounded, pitted masses. Thin sectioned at 393 feet. Dolomite--mostly coarse-grained, composite, irregularly cloudy; some fine-grained, zoned, idiomorphic to hypidiomorphic may fill vugs; slightly brecciated along fractures formed after vugs were filled, some clay and limonite pseudomorphs along fractures and interstitially in idiomorphic areas; some interstitial porosity.			
2.	Dolomite--fine-grained; yellowish-gray to light olive-gray, speckled by grayish-orange; residue scarce, mostly clay, a few grains of authigenic feldspar, a few hexactinellid spicules, mica scarce; poorly exposed in line of section, better exposed in south bank of drain.	9	43	370-379
3.	Dolomite--fine-grained; yellowish-gray in part with an olive-gray cast, speckled by grayish-orange; residue scarce, mostly clay, some silt, mostly detrital feldspar, a few grains authigenic feldspar, quartz, and glauconite; beds 6 to 12 inches; weathered, only partly exposed. Thin sectioned at 367 feet. Dolomite--mostly fine- to medium grained, some very fine grained appears to be intraclasts, these distinct on a sawed surface are much less distinct in thin section; ooids fairly distinct on sawed surfaces not surely identified in thin section; interstitial limonitic clay and limonite pseudomorphs common in finer grained portions; interstitial glauconite very scarce; a few tiny grains of twinned feldspar; a few small vugs in part filled by caliche.	23	66	347-370

Description	Thickness in feet: Interval	Cumulative	Feet above base
4. Dolomite--fine-grained; yellowish-gray; speckled by grayish-orange; oolitic; residue scarce, mostly limonitic clay, some quartz crusts of type that might fill veins or possibly replace fossils, authigenic silt-size feldspar scarce; weathered, poorly exposed.	8	74	339-347
5. Dolomite--fine-grained; yellowish-gray; residue scarce, similar to above, quartz in part chert-like; beds about 1 foot.	9	83	330-339
6. Dolomite--fine-grained, yellowish-gray, oolitic, residue similar to above, beds about 1 foot.	4	87	326-330
Thin sectioned at 328 feet. Dolomite--mostly fine-grained; oolitic, ooids closely packed; dolomite composite, oriented in ooids so that an extinction cross forms between crossed nicols, a few large rhombs appear to have replaced pelmatozoan fragments; a few limonite specks; much porosity between ooids.			
7. Dolomite--fine-grained; yellowish-gray; some limonitic specks in upper sample; residue scarce, mostly clay, some authigenic, silt-size feldspar, glauconite scarce; beds in lower 23 feet, 8 inches and less, in upper 11 feet, a foot or more; at 320 feet, a steeply dipping stylolite trends N. 50°E., has light-brown, limonitic clay along it.	34	121	292-326
Thin sectioned at 294 feet. Dolomite--on border of fine-and medium-grained, hypidiomorphic, some ghosts of pelmatozoan(?) debris, minor amount of interstitial limonitic clay and limonite.			
Point Peak Member: 25 feet thick			
8. Dolomite--fine-grained, pale yellowish-brown, beds mostly 0.25 to 1 inch, a 4-inch cherty oolite bed at 291 feet.	2	123	290-292

Description	Thickness in feet: Interval	Cumulative	Feet above base
Thin sectioned at 291 feet. Limestone--intraclasts closely packed, rounded pelmatozoan debris mostly replaced by dolomite in a very fine grained, clear calcite matrix; intraclasts, pebble size with indistinct pellets in a microgranular matrix, slightly glauconitic, dolomitic, silty, silt mostly feldspar both detrital and authigenic; fossil debris scarce, in hydrochloric residue a few mm-long scabbard-shaped fossils, very rarely a spicule similar to type B, and a few trilobite micromorphs; pelmatozoan fragments mostly replaced by one distinctly zoned dolomite rhomb, 0.15 to 0.3 mm, a few by two rhombs, rarely more, in turn partly to completely surrounded by a film of chert, residue from hydrochloric acid dolomoldic on the inside, burr-like on the outside, centers of many rhombs replaced by limonite-stained calcite, dolomite in intraclasts mostly 0.15 mm and less; chert with radial fibrous structure indistinctly preserves original rock texture, rarely replaces an individual ooid.			
9. Limestone and siltstone--limestone grades to siltstone, very fine grained; mostly greenish-gray, in upper part some yellowish-gray; silt mostly quartz, some feldspar both detrital and authigenic, hydrobiotite; micro-oolitic; glauconitic, glauconite very fine; a few thin intraformational conglomerate beds; beds average 3/8 inch, thickest 1.5 inches, minutely cross-bedded.	10	133	280-290
Thin sectioned at 283.5, 287, and 289 feet. At 283.5 feet, limestone--abundant silt, glauconite, finely comminuted fossil debris, and secondarily enlarged pelmatozoan debris and a few pellets, in microgranular to very fine grained, cloudy calcite matrix; silt mostly feldspar, both detrital			

Description	Thickness in feet: Interval	Cumulative	Feet above base
and authigenic, the latter in part with included calcite; mica common, both muscovite and biotite, biotite in part altered; glauconite in tiny rounded to angular grains; hexactinellid spicules scarce; pellets similar to those described at 289 feet. At 287 feet, limestone--intraformational conglomerate, pebbles--silty, glauconitic, pelleted, microgranular to very fine grained, one pebble veined by clear calcite mosaic, vein terminates at pebble boundaries, another pebble is calcitic clay with a center similar to the other intraclasts; matrix--composed of trilobite debris, hexactinellid spicules scarce, small intraclasts and a few pellets in fine- to medium-grained, clear calcite from secondary enlargement of pelmatozoan debris; silt mostly feldspar, both detrital and authigenic, one weathered grain with an authigenic border appears to be replaced in part by glauconite, a few other grains show the same but less distinctly; chert essentially isotropic, retains no ghosts, present as wisps, stringers, and spherical bodies. At 289 feet, limestone--pellets, silt, glauconite, hexactinellid spicules, spines, and secondarily enlarged pelmatozoan debris, and a few phosphatic brachiopod fragments and other fossil debris in a very fine grained, calcite matrix; pellets densely cloudy, on etched surface and in acid residues many are hollow suggesting that the pellets have been surficially silicified; silt mostly feldspar, both detrital and authigenic, some rhombs contain randomly oriented calcite indicating that feldspar replaced calcite; tiny limonite specks abundant; glauconite mostly in angular fragments; spines, rather minute, isotropic; bedding distinct, mostly indicated by variation of grain size of matrix and concentration of pellets.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
10. Limestone--mostly aphanitic 6- to 12-inch reef masses, between greenish-gray and light olive-gray; some medium-grained septae, and interreef limestone, yellowish-gray; some small, moderate yellowish-brown, irregularly shaped, dolomite objects. Some porous chert in interreef limestone.	2	135	278-280
11. Limestone and covered--in part coarse-grained, glauconitic, greenish-gray, 2-inch beds; in part fine-grained grading to siltstone, greenish-gray, very thinly bedded.	6	141	272-278
12. Limestone--mostly aphanitic 6- to 12-inch reef masses, between greenish-gray and light olive-gray, separated by thin, yellowish-gray, medium-grained septae containing small, moderate yellowish-brown, dolomitized objects.	2	143	270-272
13. Limestone and covered--alternating coarse-grained, trilobitic, silty, 3-inch beds and covered intervals.	3	146	267-270
SHIFT downstream about 75 feet following beds along valley wall; continue down in section.			
<u>Morgan Creek Limestone Member: 126 feet thick</u>			
14. Limestone--several types, residue scarce, mostly silt, some beekite, glauconite, and mica; beds mostly 6 to 18 inches. From 239 to 240.5 feet, fine-to medium-grained, moderate yellowish-orange, much pale yellowish-orange dolomite as ooids, irregular objects and streaks; from 240.5 to 242 feet, microgranular reef masses in medium-grained, yellowish-gray limestone, one bed; from 242 to 247 feet, medium- to coarse-grained, between light olive-gray and greenish-gray, glauconitic, slightly dolomitic toward top,	28	174	239-267

Description	Thickness in feet: Interval	Cumulative	Feet above base
trilobitic, some pelmatozoan debris; from 247 to 248 feet, aphanitic reef masses, pinkish-gray, in coarse-grained, light brownish-gray, trilobitic limestone; from 248 to 251.5 feet, alternating coarse-grained, trilobitic, and fine-grained, silty, glauconitic, nodular, thin-bedded; from 251.5 to 254.5 and 256 to 257 feet, yellowish-gray, with variously shaped dolomite objects dark yellowish-orange and moderate yellowish-brown; from 254.5 to 256 feet, mostly aphanitic reef masses, pinkish-gray, cut by horizontal stylolites with 0.5-inch amplitude, some coarse-grained, light brownish-gray, trilobitic; from 257 to 267 feet, medium-grained, yellowish-gray, slightly dolomitic, glauconitic in middle part, silty, films of silicification in lower part, silicified Billingsella in upper part.			
Thin sectioned at 247.5 and 265.5 feet. At 247.5 feet, limestone--in part stromatolitic, aphanitic, slightly to abundantly pelleted, a few elongate, irregular, clear calcite areas probably fill voids; in part large pelmatozoan fragments slightly enlarged, ooids, and a few trilobite fragments in a fine-grained, slightly cloudy, calcite matrix; one patch intermediate in character contains hexactinellid spicules; ooids radial and concentric structure, much included aphanitic calcite, in part replaced by fine to very fine grained dolomite, some contain one rhomb, others several; silt very scarce; limonitic clay along stylolites; a calcite vein in the stromatolitic limestone terminates at its margin. At 265.5 feet, limestone--intraclasts, plane-coiled gastropods, trilobite and silicified brachiopod debris, a few phosphatic brachiopod fragments,			

Description	Thickness in feet: Interval	Cumulative	Feet above base
and some glauconite, dolomite, and silt in part in an aphanitic to microgranular in part pelleted matrix, in part fine-to medium-grained, clear calcite added to pelmatozoan debris; intraclasts densely aphanitic, slightly glauconitic and silty, dolomitic; dolomite 0.02 to 0.06 mm, also replaces fossil fillings and matrix, distinctly zoned, in part replaced by limonitic calcite especially at centers of rhombs; glauconite mostly strung out along stylolites, some fills pores in pelmatozoan debris, replaces shell material of gastropods, also occurs as individual fragmental grains; silt mostly detrital authigenic feldspar; brachiopods partly replaced by microgranular chert mosaic, slight replacement of pelmatozoan debris.			
Fossils collected by Ellinwood from 245 feet, *Pseudagnostus* cf. *P. communis* (Hall and Whitfield), *Drumaspis texana* Resser, *Ptychaspis bullasa* Lochman and Hu, *Saratogia americana* (Lochman and Hu) *Saratogia fria* Lochman and Hu, and *Wilbernia diademata* (Hall); from 248 feet, *Saratogia modesta* (Lochman and Hu); from 250.5 feet, *Pseudagnostus* cf. *P. communis* (Hall and Whitfield), *Drumaspis texana* Resser, and *Saratogia fria* Lochman and Hu; from 260 feet, *Drumaspis idahoensis* Resser, *Idahoia wisconsensis* (Owen), *Saratogia fria* Lochman and Hu, *Wilbernia pero* (Walcott), and *Billingsella texana* Bell; from 264 feet, *Pseudagnostus* cf. *P. communis* (Hall and Whitfield), *Drumpaspis idahoensis* Resser, and *Saratogia modesta* (Lochman and Hu); from 265 feet, *Billingsella texana* Bell, *Pseudagnostus* cf. *P. communis* (Hall and Whitfield), *Drumaspis idahoensis* Resser, *Idahoia wisconsensis* (Owen), *Ptychaspis bullasa* Lochman and Hu, *Saratogia modesta* (Lochman and Hu),			

Description	Thickness in feet: Interval	Cumulative	Feet above base
and Wilbernia pero (Walcott); from 266 feet, Billingsella texana Bell, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis idahoensis Resser, Idahoia wisconsensis (Owen), and Wilbernia expansa Frederickson.			
Fossils collected by Bell from 245 feet, Angulotreta sp., linguloid, Billingsella coloradoensis (Shumard), Drumaspis texana Resser, Ptychaspis bullasa Lochman and Hu, Saratogia americana (Lochman and Hu), and Saratogia fria Lochman and Hu; from 248 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, Ptychaspis bullasa Lochman and Hu, Saratogia fria Lochman and Hu, and Saratogia modesta (Lochman and Hu); from 250.5 feet, Drumaspis texana Resser, Saratogia modesta (Lochman and Hu), and hexactinellid spicules; from 260 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis idahoensis Resser, Drumaspis texana Resser, and Idahoia wisconsensis (Owen); from 264 feet, Billingsella texana Bell, Drumaspis idahoensis Resser, Idahoia wisconsensis (Owen), Saratogia fria Lochman and Hu, Saratogia modesta (Lochman and Hu), and Wilbernia pero (Walcott); from 265 feet, Billingsella texana Bell, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis idahoensis Resser, Idahoia wisconsensis (Owen), Saratogia modesta (Lochman and Hu), and Wilbernia pero (Walcott); from 266 feet, Billingsella texana Bell, Drumaspis idahoensis Resser, Idahoia wisconsensis (Owen), and Wilbernia pero (Walcott); from 266+ feet, Billingsella texana Bell			
15. Covered.	3	177	236-239
SHIFT downstream about 150 feet following beds along valley wall; continue down in section.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
16. Limestone--several types, silt and very fine sand scarce, mostly quartz and detrital feldspar, some authigenic overgrowth, a few rhombs; hydrobiotite scarce; glauconite common; beds mostly 6 to 18 inches, a few thinner.	26	203	210-236
From 210 to 211.5 feet, medium-grained, yellowish-gray; from 211.5 to 212.5 feet, very fine grained, light olive-gray; from 212.5 to 213.5 feet, medium-grained, light olive-gray; from 213.5 to 214 feet, fine-grained, light olive-gray; from 214 to 214.5 feet, coarse-grained, very pale orange, brachiopod coquinite; from 214.5 to 215 feet, fine-grained, light olive-gray; from 215 to 215.5 feet, coarse-grained, many brachiopods; from 215.5 to 216 feet, medium-grained, greenish-gray; from 216 to 218 feet, medium-grained, yellowish-gray, mottles and foot-long patches of dark yellowish-orange dolomite; from 218 to 219 feet, very fine grained, mottled; from 219 to 223 feet, medium-grained, yellowish-gray to light olive-gray, slightly glauconitic; from 223 to 226.5 feet, medium-grained, pale yellowish-brown, mottles and patches of dark yellowish-orange dolomite; from 226.5 to 229 feet, mostly coarse-grained, light- to medium light-gray, slightly glauconitic, fossiliferous, beds 4 to 8 inches, some fine-grained, nodular, silty; from 299 to 230 feet, fine-grained, grayish-green, silty, nodular, recessive; from 230 to 233 feet, coarse-grained, yellowish-gray, slightly dolomitic, massive, trilobitic; from 233 to 235 feet, coarse-grained, yellowish-gray, slightly glauconitic, beds mostly 6 inches or less, trilobitic; from 235 to 236 feet, coarse-grained, yellowish-gray, slightly dolomitic.			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Thin sectioned at 217 feet. Limestone--calcareous brachiopod, trilobite, and pelmatozoan debris, numerous dolomitized intraclasts, much dolomite, and a little silt and glauconite in an indistinctly pelleted, aphanitic matrix; dolomite 0.03 to 0.1 mm, replaces matrix, fossil fillings, and intraclasts, a little replaced by calcite and admixed limonite; silt mostly detrital and authigenic feldspar.			
Fossils collected by Ellinwood from 210 feet, Angulotreta sp., Pseudodicellomus mosaicus (Bell), Billingsella coloradoensis (Shumard), Taenicephalus shumardi (Hall), and Wilbernia halli Resser, var. A Ellinwood; from 213 feet, Billingsella coloradoensis (Shumard), Taenicephalus shumardi (Hall), Pelagiella sp., and Sinuella minuta Knight; from 215 feet, Taenicephalus shumardi (Hall); from 220 feet, Billingsella cf. texana Bell, Taenicephalus sp., and Pelagiella sp.; from 232 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Idahoia lirae (Frederickson), Idahoia lirae (Frederickson), var. A Bell in Bell and Ellinwood, Saratogia americana (Lochman and Hu), Wilbernia diademata (Hall), echinoderm plate?, Sinuella minuta Knight.			
Fossils collected by Bell from 215 feet, Billingsella coloradoensis (Shumard), Taenicephalus shumardi (Hall), and Wilbernia expansa Frederickson; from 233 feet, Angulotreta sp., linguloid, Idahoia lirae (Frederickson), Idahoia lirae (Frederickson), var. A Bell in Bell and Ellinwood, and Wilbernia diademata (Hall); from 233+ feet, Pseudodicellomus mosaicus (Bell), Billingsella			

Description	Thickness in feet: Interval	Cumulative	Feet above base
coloradoensis (Shumard), Sinuella minuta Knight, and Wilbernia expansa Frederickson.			
SHIFT downstream about 150 feet following beds along valley wall; continue down in section.			
17. Limestone--several types, residue scarce.	11	214	199-210
From 199 to 199.5 feet, fine-grained, greenish-gray, glauconitic, fairly evenly bedded; from 199.5 to 201.5 feet, medium to coarse grained, yellowish-gray, glauconitic, Billingsella coquinite, massive; from 201.5 to 203.5 feet, medium-grained, yellowish-gray, massive; from 203.5 to 204 feet, fine-grained, greenish-gray, silty, glauconitic; from 204 to 205 feet, coarse-grained, yellowish-gray mottled by pale-brown; from 205 to 208 feet, fine-grained, lower foot yellowish-gray, weathers dark yellowish-orange, rest medium light-gray, massive; from 208 to 210 feet, fine-grained, yellowish-gray to light olive-gray, glauconitic, beds mostly 1 to 6 inches.			
Thin sectioned at 200, 200.5, and 206.5 feet. At 200 feet, limestone--much silt and glauconite, some dolomite, and a few phosphatic brachiopod fragments, pellets, and dolomitic intraclasts in a clear to slightly cloudy, very fine grained to microgranular matrix; silt mostly fresh detrital feldspar, numerous rhombs; glauconite mostly angular, a few rounded grains, mostly fairly pure, a few grains slightly "moth-eaten" from admixed calcite; dolomite 0.05 to 0.15 mm, in part replaced by calcite and admixed limonite. At 200.5 feet, limestone--much trilobite, calcareous brachiopod, and secondarily enlarged pelmatozoan debris,			

Description	Thickness in feet: Interval	Cumulative	Feet above base
a few phosphatic brachiopod fragments, and a little glauconite in an indistinctly pelleted, aphanitic to microgranular matrix, some very fine grained, clear calcite matrix; dolomite very scarce, very fine grained, mostly replaces fossil fillings; glauconite also common in fossil fillings, invades pelmatozoan debris, mostly irregular grains. At 206.5 feet, limestone--granule and small pebble intraclasts, densely aphanitic, and a few trilobite and pelmatozoan fragments in a fine to very fine grained, clear calcite matrix, in part radial; a few intraclasts in part pelleted, some show indistinct overgrowth; a few 0.05 to 0.15 mm dolomite rhombs mostly in intraclasts, also replace matrix; tiny silt grains very scarce.			
Fossils collected by Ellinwood from 199 feet, Linnarssonella girtyi Walcott; from 200 feet Angulotreta microscopica (Shumard), Ceratreta hebes Bell, and Angulotreta sp.; from 201 feet, Angulotreta microscopica (Shumard), Ceratreta hebes Bell, Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), var. A Longacre, and Parabolinoides contractus Frederickson; from 202 feet, Billingsella coloradoensis (Shumard), Orygmaspis llanoensis Walcott, var. A Longacre, and Parabolinoides contractus Frederickson; from 204 feet, Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), var. A Longacre, Taenicephalus gouldi (Frederickson), Wilbernia halli Resser, var. A Ellinwood, and Pelagiella sp.; from 206 feet, Conaspis testudinatus Ellinwood, Orygmaspis llanoensis (Walcott), and Wilbernia halli Resser, var. A Ellinwood.			
Fossils collected by Bell from 200 feet (lateral to painted section),			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Angulotreta microscopica (Shumard), Angulotreta sp., Ceratreta hebes Bell, Billingsella coloradoensis (Shumard), Eoorthis remnicha (Winchell), Parabolinoides contractus Frederickson, and Pelagiella sp.; from 200.5 feet, Angulotreta microscopica (Shumard), Billingsella coloradoensis (Shumard), Irvingella major Ulrich and Resser, and Parabolinoides contractus Frederickson; from 202 feet, Angulotreta microscopica (Shumard), Billingsella coloradoensis (Shumard), Eoorthis remnicha (Winchell), Orygmaspis llanoensis (Walcott), and Taenicephalus gouldi (Frederickson); from 204 feet, Billingsella coloradoensis (Shumard) and Orygmaspis llanoensis (Walcott).			
SHIFT downstream about 150 feet following beds along valley wall; continue down in section.			
18. Limestone--several types, residue more abundant than in interval above, mostly silt and very fine sand, silt and sand mostly quartz, much feldspar, mica, and glauconite, feldspar mostly detrital, some authigenic overgrowths and rhombs, much biotite, some hydrobiotite and muscovite.	14	228	185-199
From 185 to 187 feet, fine-grained, greenish-gray, silty, glauconitic, burrowed; from 187 to 189 feet, medium-grained, yellowish-gray mottled by moderate yellowish-brown and dark yellowish-orange dolomite, essentially one bed; from 189 to 190 feet, fine-grained, greenish-gray, silty, glauconitic, burrowed; from 190 to 191 feet, fine-grained, mostly moderate yellowish-brown, several beds; from 191 to 193 feet, medium-grained, yellowish-gray, oolitic; from 193 to 194 feet, medium-to coarse-grained, light olive-gray, glauconitic, trilobitic; from 194 to 197 feet,			

Description	Thickness in feet: Interval	Cumulative	Feet above base
yellowish-gray, middle part much mottled by moderate yellowish-brown; from 197 to 199 feet, fine-grained, greenish-gray, silty, glauconitic, burrowed.			
Thin sectioned at 185.5, 188, 189, and 191 feet. At 185.5 feet, limestone--much silt, very fine sand, glauconite, mica, many pellets, and some trilobite, pelmatozoan, and phosphatic brachiopod debris in a fine-grained to microgranular matrix, a little aphanitic matrix; silt mostly fresh detrital feldspar, some authigenic feldspar and quartz; glauconite mostly fragmental, may be altering from biotite; mica mostly altered biotite, some hydrobiotite and muscovite, mica more abundant in irregular, cross-cutting, argillaceous beds; a few calcite gash veins. At 188 feet, limestone--numerous ooids and much dolomite in a very fine-grained, clear, calcite mosaic, some radial calcite; ooids mostly hazy borders, in part aphanitic with little structure, many with aphanitic centers and aphanitic gores, in part with strong radial structure and faint concentric structure, many replaced by dolomite 0.05 to 0.2 mm, also replaces matrix, mostly anhedral to hypidiomorphic, some rhombic limonitic zones where weathered, a few rhombs replaced by calcite. At 189 feet, limestone--in part much silt, glauconite, and mica in a very fine grained, cloudy matrix; in part much mica and a few trilobite fragments in fine to very fine grained, clear, secondary calcite added to pelmatozoan debris; silt mostly fresh detrital feldspar, in part authigenic, some quartz and			

Description	Thickness in feet: Interval	Cumulative	Feet above base
black opaque minerals; glauconite fragmental; mica mostly hydrobiotite, may be altering to glauconite. At 191 feet, limestone--silt, very fine sand, and glauconite in an aphanitic matrix; mostly replaced by dolomite, dolomite in turn mostly replaced by calcite and much admixed limonite; glauconite fragmental; sand and silt mostly fresh detrital feldspar, some authigenic ; dolomite 0.03 to 0.1 mm; branching, clear calcite veins common.			
Fossils collected by Bell from 186.5 feet, Linnarssonella girtyi Walcott, Camaraspis convex (Whitfield), Dellea suada (Walcott), and Pterocephalia sanctisabae Roemer; from 190.5 feet, Linnarssonella girtyi Walcott, Dellea suada (Walcott), Dokimocephalus intermedius (Resser), Elvinia roemeri (Shumard), aff. Morosa? bothra Stitt, and Pterocephalia sp.; from 191 feet, Ocnerorthis sp., Dellea suada (Walcott), Elvinia roemeri (Shumard), Pterocephalia sanctisabae Roemer, and spined pygidium; from 193 feet, Linnarssonella girtyi Walcott, Ocnerorthis sp., Camaraspis convexa (Whitfield), Deckera completa Wilson, Dellea suada (Walcott), Dokimocephalus intermedius (Resser), Morosa? bothra Stitt, and Pterocephalia sanctisabae Roemer; from 194 feet, Linnarssonella girtyi Walcott, Ocnerorthis sp., Camaraspis convexa (Whitfield), Deckera completa Wilson, Dellea suada (Walcott), Dokimocephalus intermedius (Resser), Elvinia roemeri (Shumard), linguloid type B, Morosa? bothra Stitt, and Pterocephalia sanctisabae Roemer; from 194± feet, Linnarssonella girtyi Walcott, Pseudagnostus cf. P. communis (Hall & Whitfield), Camaraspis convexa (Whitfield), Dellea suada (Walcott),			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Dokimocephalus intermedius (Resser), Elvinia roemeri (Shumard), Morosa? bothra Stitt, Morosa simplexa Stitt, and Pterocephalia sanctisabae Roemer; from 197 feet, Linnarssonella girtyi Walcott, Camaraspis convexa (Whitfield), Dokimocephalus intermedius (Resser), and Elvinia roemeri (Shumard).			
SHIFT downstream about 400 feet along valley wall using Billingsella bed at 200 feet to make shift; continue down in section.			
19. Limestone--coarse- to fine-grained, residue similar to above, some siltstone in lower part.	9	237	176-185
From 176 to 177 feet, fine-grained, silty, burrowed, glauconitic; from 177 to 177.5 feet, coarse-grained, some dark yellowish-orange spots, glauconitic; from 177.5 to 178 feet, medium-grained, pale yellowish-brown; from 178 to 179 feet, medium-grained, pale yellowish-brown with greenish cast from glauconite; from 179 to 182.5 feet, fine-grained, silty, glauconitic, burrowed except for bed from 179.5 to 180.5 feet; from 182.5 to 185 feet, mostly medium-grained, pale yellowish-brown, oolitic, a fine-grained, silty bed near middle.			
Thin sectioned at 183.5 feet. Limestone--ooids, glauconite, silt, intraclasts, pellets, and some trilobite and pelmatozoan debris in an aphanitic to very fine grained matrix the crystals of the latter twinned and in part continuous with crystal wedges in ooids; a few ooids mostly hazy, a few sharp ones have closely spaced concentric structure, most have distinct radial structure with gores of aphanitic limestone included between			

Description	Thickness in feet: Interval	Cumulative	Feet above base
the crystal wedges, in very fine-grained matrix crystal wedges are twinned and continuous with matrix; however, ghost outlines of ooids are distinct with aphanitic gores ending at ooid boundaries; this may be evidence for recrystallization, fossil debris form nuclei, therefore many ooids are irregularly shaped; fossil fillings and intraclasts (also probably fossil fillings) densely aphanitic, a few coated by glauconite; glauconite also abundant fragments, a few spherical grains, concentrated along stylolites, seldom in ooids except as part of nuclei; silt mostly fresh detrital feldspar, a few authigenic grains and some quartz, none included in ooids; dolomite scarce, a pelmatozoan fragment partly replaced by a 1.2-mm rhomb, on sawed surfaces a few intraclasts replaced by very fine grained dolomite; some hydrobiotite and altered biotite; some limonitic clay along stylolites; a calcite vein is interrupted by a stylolite.			
Fossils collected by Bell from 180 feet, Linnarssonella girtyi Walcott.			
20. Covered--except for some weathered glauconite and calcite exposed beneath overlying ledge.	2	239	174-176
SHIFT downstream about 400 feet following beds along valley wall; continue down in section.			
21. Limestone--coarse-grained, light brownish-gray, numerous objects of dark yellowish-orange dolomite, glauconitic, two beds.	1	240	173-174
22. Limestone--fine-grained; medium-gray to greenish-gray; sandy, sand very	2	242	171-173

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	fine; silty, some siltstone; glauconitic; slightly micaceous.			
23.	Limestone--coarse-grained; between light olive-gray and greenish-gray; glauconitic; dolomitic, dolomite mostly ooids, other objects, and patches at 165 feet up to several inches in length, dark yellowish-orange; slightly silty, some very fine sand, silt and sand mostly quartz, much feldspar, mostly detrital, some authigenic; some biotite, a little hydrobiotite and muscovite; trilobites common.	8	250	163-171
	Thin sectioned at 166 feet. Limestone--ooids in part dolomitized, and a little glauconite, silt and very fine sand, and a few pellets mostly in a very fine grained, clear calcite mosaic, some calcite radial to ooids; ooids 0.4 to 1.5 mm, hazy, distinct radial, some concentric structure, abundant aphanitic gores between crystal wedges, many replaced to partly replaced by dolomite; dolomite 0.05 to 0.25 mm, mostly anhedral, mostly replaces scattered ooids, concentrated in one thin bed probably influenced by a stylolite where it is mostly replaced by calcite and admixed limonite; silt and sand mostly fresh detrital feldspar, some authigenic feldspar and quartz, silt and fragmental glauconite mostly concentrated near a stylolite; a stylolite with traces of limonitic clay along it truncates ooids.			
	Fossils collected by Bell from 168 feet, Linnarssonella girtyi Walcott, linguloid type B, Pseudagnostus cf. P. communia (Hall and Whitfield), Elvinia roemeri (Shumard), Kindbladia wichitaensis (Resser), Plataspella anatina (Resser), and			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Pseudosaratogia aff. *P. magna* Wilson.			
24.	Limestone--fine-grained, medium-gray to greenish-gray, silty, residue similar to above but more abundant.	1	251	162-163
25.	Limestone--coarse-grained, pale yellowish-brown, oolitic, slightly glauconitic, one bed.	1	252	161-162
26.	Limestone--mostly fine-grained, medium-gray to greenish-gray, silty, poorly exposed, appears to be burrowed; a few coarse-grained, thin beds.	2	254	159-161
27.	Limestone--coarse-grained fossil debris; mostly pale yellowish-brown and grayish orange-pink, some pale-red and light olive-gray; a dolomite bed at 144 feet, glauconitic; lower 3 or 4 feet very sandy, sand very fine to coarse, upward sand less abundant and finer, scarce above 155 feet, grains mostly angular to subrounded, many reconstituted, crescentic impact scars on well-rounded grains, mostly quartz, straight to undulatory extinction, feldspar scarce, mostly in finer grain sizes; silty in upper part, less silty downward; oolitic from 151 to 152 and 154 to 155 feet, ooids in part dolomitized; a 6-inch bed at 157 feet contains dark yellowish-orange mudballs (?), and other irregular objects perhaps fossil fragments; beds mostly 6 to 12 inches, some up to 3 feet in lower part, wavy; stylolitic.	18	272	141-159

Thin sectioned at 144, 149, 151.5, and 155 feet. At 144 feet, dolomite--fine- to coarse-grained, very sandy, glauconitic, much pelmatozoan debris; each fragment and some surrounding matrix replaced by one rhomb of

Description	Thickness in feet: Interval	Cumulative	Feet above base
dolomite, a few fragments invaded by glauconite before dolomitization (Pl.12, fig. 1), phosphatic brachiopod fragments scarce; sand very fine to coarse,angular to well-rounded, mostly quartz with straight extinction, some undulatory extinction, bubble trains common, a few feldspar grains; large glauconite grains invaded and disrupted by dolomite (Pl.12, fig. 2), a few rounded, many fragmental; one post-dolomitization fracture. At 149 feet, limestone--trilobite debris, ooids, sand, glauconite, dolomite, and a few intraclasts mostly in fine- to medium-grained, clear, secondary calcite added to pelmatozoan debris, some radial calcite; ooids mostly centered by trilobite fragments, radial structure, some aphanitic stringers and calcite dust, rather hazy borders, a few replaced or partly replaced by dolomite (Pl.12, fig. 3); dolomite 0.1 to 0.25 mm, also replaces matrix; sand very fine to coarse, angular to well-rounded, mostly quartz with straight extinction, some with strongly undulatory extinction, a few composite grains, feldspar scarce; glauconite rounded to lobate and fragmental, mostly invaded by calcite, some limonitic weathering, a few pelmatozoan fragments invaded by glauconite (Pl.12, fig. 4); intraclasts aphanitic, contain glauconite, sand, and pelmatozoan debris, may be fossil fillings. At 151.5 feet, limestone--ooids in part replaced by dolomite, and a little silt, very fine sand, and glauconite in a microgranular to aphanitic matrix, the latter in part pelleted; ooids 0.2 to 2 mm, some radial structure, very little concentric structure, borders fairly sharp, much included calcite dust, larger than calcite of matrix, crystal wedges in part twinned, some			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	ooids centered by twinned pelmatozoan fragments in part surrounded by fine-grained dolomite, others centered by intraclasts containing sand, silt, or glauconite, in part replaced by dolomite, in some ooids composed chiefly of dolomite, the periphery of the dolomite has a peculiar serrate appearance as if etched followed by addition of a thin concentric layer of calcite, in others dolomite rhombs are truncated at margins of ooids; dolomite 0.05 to 0.75 mm, in part slightly weathered, also replaces fossils and matrix; silt and very angular sand mostly concentrated near stylolites, mostly fresh detrital feldspar, some authigenic feldspar and quartz, a few fine to coarse, rounded quartz grains; glauconite fragmental, scarce, mostly near stylolites; stylolites with much limonitic clay along them truncate ooids. At 155 feet, limestone--a few ooids in part replaced by dolomite, and one trilobite fragment in an aphanitic to microgranular, indistinctly pelleted matrix; fine-grained, clear calcite probably fills voids; ooids hazy, indistinct radial and concentric structure, a few include pellets, all include much aphanitic calcite; dolomite 0.1 to 0.3 mm, also replaces matrix, common along stylolites where it is mostly replaced by calcite and admixed limonite; calcite veins indistinct.			
	Welge Sandstone Member: 12 feet thick			
28.	Sandstone--very fine to very coarse grained, finer grained upward; dark yellowish-brown to pale yellowish-brown, some grayish-orange; calcitic; in part glauconitic and shaly; some	12	284	129-141

Description	Thickness in feet: Interval	Cumulative	Feet above base
quartzite; grains angular to well-rounded, in part reconstituted, impact marks common, straight to undulatory extinction; cross-bedded.			
Bottom 6-inch bed very coarse grained, glauconitic, thickens in next segment of section to 1 foot, contains pebbles up to 0.5 inch; followed upward by 10 inches of sandy, glauconitic shale; 6 inches coarse-grained, glauconitic sandstone; 12 inches fine-grained, cross-bedded sandstone, slightly glauconitic toward top; 4 inches recessive, glauconitic sandstone; 28 inches fine- to medium-grained sandstone, cross-beds weather in relief; 12 inches recessive, glauconitic sandstone and shale; 3.9-foot bed mostly fine, some very fine grained sandstone, cross-bedded; top 15-inch bed fine-grained sandstone, cross-bedded.			
Thin sectioned at 129 and 133 feet. At 129 feet, sandstone--grains very fine to very coarse, well-rounded, mostly quartz with straight extinction and bubble trains, some with undulatory extinction, a few grains composite, a few tiny black opaque minerals; glauconite common as elliptical to spherical grains, a few veined by calcite; cement mostly fine-grained dolomite, in part replaced by calcite and admixed limonite; 1- to 2-mm intraclasts of an isotropic, clear brown material (possibly phosphatic), in part bordered by "ordered" glauconite, contain quartz grains and phosphatic brachiopod fragments; phosphatic brachiopod fragments common elsewhere. At 133 feet, sandstone--fine- to medium-grained,			

Description	Thickness in feet: Interval	Cumulative	Feet above base
grains mostly well-rounded, some angular, mostly quartz with straight extinction, some with undulatory extinction, a few composite grains, bubble trains abundant, one chert grain, a few black opaque minerals in part altered; glauconite scarce, weathered; cement mostly fine-grained dolomite mostly replaced by calcite and admixed limonite.			
Fossils collected by Bell from 139 feet, *Elburgia* aff. *E. granulosa* (Hall and Whitfield) and *Pseudosaratogia* aff. *P. magna* Wilson.			
SHIFT downstream about 1,750 feet along base of Welge Sandstone onto Scott Klett property at a point 330 feet north of fence; continue down in section.			
Riley Formation: 129 feet described			
Lion Mountain Sandstone Member: 31 feet thick			
29. Shale--moderate olive-brown, weathers pale-brown to moderate-brown, glauconitic, silty, much weathered especially in upper part.	2	286	127-129
30. Greensand--grayish olive-green to dark grayish-green, weathers moderate yellowish-brown; calcitic; mostly glauconite and quartz, some shale, siltstone rare; glauconite both finely comminuted and as distinct grains; sand fine to very coarse, mostly well-rounded to subrounded, impact marks common on larger grains, much secondary growth; mostly friable, a few 2-inch indurated, less glauconitic beds; a few thin cross-beds of trilobite coquinite.	10	296	117-127
A few phosphatic brachiopods.			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
31.	Greensand and limestone--greensand, grayish-green; calcitic; mostly glauconite and quartz, some shale and siltstone; similar to above except sand very fine to medium. Limestone, in part poorly exposed cross-beds of trilobite coquinite; coarse-grained; greenish-gray to brownish-gray, speckled by moderate yellowish-orange, and dark yellowish-orange; sandy, glauconitic; in upper 2 feet crops out boldly, moderate yellowish-brown to dark yellowish-brown, very sandy, 6-inch beds.	7	303	110-117

Thin sectioned at 112 feet. Limestone--dolomite, glauconite, and silt in an aphanitic, faintly pelleted matrix; dolomite 0.05 to 0.15 mm as individual rhombs and clusters; silt mostly fresh detrital feldspar, some authigenic feldspar, quartz scarce; calcite veins along tectonic fractures common, later than dolomite, gash veins earlier than dolomite; glauconite fragmental; some concentration of silt and glauconite along a stylolite.

Phosphatic brachiopods including acrotretids common.

Fossils collected by Bell from 111 feet, Apsotreta expansa Palmer, linguloids types A and B, and ?Sigmocheilus sigmoidalis (Palmer).

Fossils collected by Wilson from 111± feet, linguloids types A and B, paterinid, Dictyonina perforata Palmer, Angulotreta triangularis Palmer, aphelaspids 2 sp., dunderbergids, Dytremacephalus granulosus Palmer, and Dytremacephalus n. sp. 1.

Description	Thickness in feet: Interval	Cumulative	Feet above base
SHIFT about 350 feet southwestward along beds, continue down in section along drain, then along edge of floodplain to granite outcrop.			
32. Limestone and greensand--limestone coarse-grained, somewhat finer in upper half; yellowish-gray, light olive-gray to greenish-gray and dark greenish-gray depending on amount of glauconite, some moderate yellowish-brown; lower 5 feet weathers medium-gray and into irregular, thin slabs, top 3 feet weathers moderate yellowish-brown; somewhat sandy, sand very fine to fine, a few medium grains in upper sample, rounded to angular; mostly cross-bedded, beds mostly 6 to 12 inches; a few beds of white trilobite coquinite. Greensand mostly glauconite, quartz, and calcite; light olive-gray; shaly portions burrowed; poorly exposed in line of section especially from 105 to 107 feet, well-exposed upstream. Abundant trilobites and a few phosphatic brachiopods including acrotretids in limestone.	10	313	100-110
33. Sandstone--very fine grained, light olive-gray, weathers dark yellowish-brown, glauconitic, one bed. Thin sectioned at 99 feet. Sandstone--mostly silt, very fine sand and some glauconite, phosphatic brachiopod and trilobite debris in microgranular dolomite; silt and sand mostly quartz, much fresh detrital feldspar and black opaque minerals; glauconite fragmental; dolomite occurs as irregular swirls and cement.	2	315	98-100

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Cap Mountain Limestone Member: 98 feet thick			
34.	Limestone--mostly coarse-grained, some medium-grained; yellowish-gray to light olive-gray to greenish-gray, weathers mostly medium-gray, some patches of pale yellowish-brown to dark yellowish-brown; sandy, sand very fine, mostly quartz, grains of feldspar and mica scarce, feldspar much weathered; glauconitic; dolomitic; beds wavy, mostly 4 to 8 inches.	17	332	81-98

Thin sectioned 93 feet. Limestone--abundant trilobites and a few phosphatic brachiopods in radial calcite cement (Pl.11, figs. 5,6); some silt, very fine sand, fragmental glauconite, and very fine grained dolomite, mostly enclosed in fossils; sand and silt mostly quartz.

Fossils collected by Wilson from 92± feet, aphelaspids, Glaphyraspis sp., Angulotreta triangularis Palmer, and Dysoristus lochmanae Bell, from 96± feet, aphelaspids, aff. Listroa? sp., Angulotreta triangularis Palmer, and linguloid type A; from 102.5± feet, linguloid type B, aphelaspids, Dicanthopyge aff. D. reductus Palmer, Dunderbergia variagranula Palmer, Dytremacephalus sp., Glaphyraspis aff. G. parva (Walcott), Listroa longifrons Palmer, and Angulotreta triangularis Palmer; from 107.5±feet, aphelaspids, Dunderbergia sp., ?Sigmocheilus sigmoidalis (Palmer), Taenora? platifrons (Palmer), Angulotreta triangularis Palmer, and linguloid type B.

Fossils collected by Bell from 94 feet, Angulotreta triangularis Palmer, linguloid type B. aphelaspid,

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	Aphelaspis conveximarginatus (Palmer), Dunderbergia cf. D. nitida (Hall and Whitfield), and Dytremacephalus sp.			
35.	Limestone--mostly fine- to medium-grained, lower few inches coarse-grained, glauconitic, trilobitic; yellowish-gray to greenish-gray, weathers medium-gray to mostly moderate yellowish-brown; dolomitic; silty.	4	336	77-81
36.	Siltstone--fine-grained; dark yellowish-brown both fresh and weathered; dolomitic; glauconitic; silt mostly feldspar, much of it authigenic, some overgrowths around cloudy centers, many grains cloudy throughout, some quartz, a few opaque grains; top 2 feet one bed, lower foot thin-bedded. Thin sectioned at 74 feet. Sandstone--mostly silt and very fine sand and some glauconite in abundant microgranular dolomite matrix replaced by calcite and admixed limonite; sand and silt mostly fresh detrital fedlspar, much authigenic feldspar and quartz, many black opaque minerals; glauconite fragmental; muscovite scarce.	3	339	74-77
37.	Limestone--lower foot coarse-grained, yellowish-gray to greenish-gray, very glauconitic, thin-bedded, abundantly trilobitic; top 3 feet fine-grained, medium-gray with a network of moderate yellowish-brown dolomite, very silty, silt similar to above, sparsely glauconitic, beds 6 to 12 inches. Fossils collected by Bell from 72 feet, Angulotreta triangularis Palmer, aphelaspid, and Cheilocephalus brevilobus (Walcott).	4	343	70-74

	Description	Thickness in feet: Interval	Cumulative	Feet above base
38.	Dolomite and limestone--dolomite fine- to medium-grained; between very pale orange and pale yellowish- brown, weathers moderate yellowish-brown and medium-gray; glauconite scarce to absent except in a few thin beds; some silt and very fine sand, mostly feldspar, many clear authigenic crystals, others have cloudy centers, some grains cloudy throughout. From 53 to 55 feet, alternating thin beds of dolomite and limestone; from 55 to 56 feet, moderate yellowish-brown limestone, one bed; from 56 to 57 feet, alternating beds of dolomite and limestone; from 57 to 60 feet, moderate yellowish-brown limestone, two beds, upper one 2 feet thick; from 60 to 70 feet, dolomitic limestone, dolomite weathers in relief along bedding and as a network; oolitic, ooids in lower part dolomite, grayish-orange, in upper part calcite, lighter colored; very massive, where weathered beds about 1 foot. Thin sectioned at 55, 68, and 70 feet. At 55 feet, limestone--abundant ooids and some silt, glauconite, pelmatozoan debris, and dolomite in a very fine grained to microgranular, cloudy calcite matrix, some pelleted, aphanitic matrix; ooids 0.25 to 1 mm, about equally dolomite and calcite, those of calcite have rather indistinct boundaries, distinct radial structure with gores of aphanitic calcite between the crystal wedges; limonite masses seen on etched surfaces are of about the size of ooids and may have replaced dolomite ooids; dolomite, about 0.1 mm in ooids, also rhombs up to 2 mm bounded by limonitic stain replace pelmatozoan fragments and	17	360	53-70

Description	Thickness in feet: Interval	Cumulative	Feet above base
lap over into matrix (Pl.11, fig. 2); silt mostly detrital feldspar, some authigenic feldspar, much quartz; glauconite mostly fragmental. At 68 feet, limestone (Pl.11, fig.3)--trilobite debris, glauconite, silt, sand, ooids, dolomite, and intraclasts in fine- to medium-grained, clear, secondary calcite added to pelmatozoan debris, some calcite radial to trilobite fragments; glauconite fairly pure, grains spherical to very long elliptical,			
in part curved and restricted in middle, some fragments; sand fine to very fine, subrounded to angular; silt and sand mostly quartz, some detrital feldspar; ooids 0.25 to 0.75 mm, sharp boundaries, distinct radial structure, aphanitic calcite gores between crystal wedges, in part replaced by dolomite; intraclasts scarce, one aphanitic calcite, others completely dolomite; dolomite 0.05 to 0.1 mm in intraclasts and enclosed in fossils, rhombs up to 0.5 mm bordered by limonitic stain replace pelmatozoan debris and adjacent matrix; portions of ooids missing along stylolites. At 70 feet, limestone--abundant ooids, a few intraclasts, pellets, and glauconite grains, some silt, very fine sand, dolomite, and a few pelmatozoan fragments mostly in very fine grained, clear calcite matrix, some radial calcite; ooids (Pl.11, fig. 4) 0.3 to 1 mm, mostly hazy boundaries, gores of aphanitic calcite between crystal wedges, those not dolomitized have distinct radial and concentric structure, a few include silt, sand, and glauconite; dolomite mostly 0.03 to 1 mm, some slight weathering, replaces ooids, matrix, and intraclasts; intraclasts aphanitic, dolomitic (Pl.11, fig. 4), one contains an incipient ooid; glauconite fragmental, some grains rounded; silt mostly fresh detrital feldspar, some			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	authigenic feldspar, quartz scarce; portions of ooids missing along stylolites. Trilobites common. Fossils collected by Bell from 54 feet, linguloid, Coosina cf. C. ariston (Walcott), Crepicephalus autralis Palmer, Lonchocephalus sp., Pemphigaspis inexpectans Lochman, and Tricrepicephalus thoosa (Walcott); from 69 feet, Angulotreta sp., Dictyonina perforata Palmer, linguloid, aphelaspid, and Cheilocephalus brevilobus (Walcott).			
39.	Dolomite--mostly fine-grained, some very fine grained; light-gray to yellowish-gray, light olive-gray, greenish-gray where glauconitic, weathers light to moderate brown; silt and very fine sand scarce, similar to above; splotches of galena in lower 6 inches, also away from section at 50 feet and from 45 to 46 feet in and near prospect pits; a few small ooids; beds mostly 3 to 4 feet. A solution zone from about 35 to 40 feet is filled by dark yellowish-orange, impure limonite, containing angular quartz derived from the nearby granite probably during the present erosion cycle. Thin sectioned at 50 feet. Dolomite--microgranular to very fine grained; cloudy; slightly silty and glauconitic; glauconite fragmental; a few specks of pyrite; some galena in part altered to cerussite or anglesite; numerous ooids very apparent on a sawed surface can scarcely be seen in thin section, a few composed of dolomite so oriented that an extinction cross forms between crossed nicols; silt mostly detrital feldspar, some quartz.	18	378	35-53

Description	Thickness in feet: Interval	Cumulative	Feet above base
SHIFT northward a few feet from bottom of pit up dip slope; continue down in section.			
40. Dolomite--fine-grained; greenish-gray to yellowish-gray, weathers light to moderate yellowish-brown and grayish-orange; slightly glauconitic; pyrite at 28 feet; galena rare; silt and very fine sand similar to above; some porosity, beds 1 to 3 feet.	10	388	25-35
41. Dolomite--mostly fine-grained, some very fine grained in middle part; greenish-gray to yellowish-gray depending on amount of glauconite, in part grades to dark yellowish-orange, in workings mottled light- and moderate-brown, less mottled on more weathered surfaces; galena common from 10 to 13 feet, an occasional speck up to 20 feet; silt and very fine sand similar to above; very massive.	15	403	10-25
42. Dolomite--fine to very fine grained; yellowish-gray to light olive-gray, mottled moderate-brown where weathered; glauconite very scarce; silt and very fine sand similar to above; elongate pits parallel to bedding on weathered surfaces.	5	408	5-10
One thin section from 5 to 10 feet. Dolomite--ooids composed of fine to very fine grained dolomite and a few pellets in a fine- to medium-grained, clear dolomite matrix; ooids 0.25 to 2mm, mostly very cloudy, a few clear, some alternating cloudy and clear concentric zones (Pl.11, fig. 1); glauconite scarce; silt common, mostly quartz and detrital feldspar; pyrite common; dolomite zoned; narrow bleached zones (Pl. 11, fig. 1) are probably replaced calcite veins.			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
43.	Dolomite--fine-grained; greenish-gray to light olive-gray, weathers moderate yellowish-brown; glauconitic, grains medium, smaller upward, in part dolomitic; slightly silty and sandy, sand very fine, silt and sand mostly authigenic feldspar, some overgrowths, some grains cloudy throughout, a few fragments of microcline appear to be locally derived, quartz common; scattered grains of galena; pyrite specks scarce; small vugs lined by medium-grained, white dolomite; one massive bed. One thin section from 0 to 5 feet. Dolomite--ooids microgranular to fine-grained in a very fine to fine grained, clear matrix; ooids 0.25 to 1.5 mm; a few pelmatozoan fragments replaced by optically continuous dolomite; glauconite abundant, interstitial to distinct, grains mostly notched, a few grains partly replaced by galena; a large twinned crystal of galena contains dolomite; silt scarce except in one area, mostly quartz and detrital feldspar; swirled structure suggests slumping before lithification; stylolites common, some limonitic clay along them.	5	413	0-5

Table 45. Insoluble residue content, Klett-Walker section, Blanco County, Texas.

Feet above base	Percent residue	Feet above base	Percent residue	Feet above base	Percent residue
400-405	1.1	260-265	4.1	125-129	85.1
395-400	1.2	255-260	4.5	120-125	79.6
390-395	1.4	250-255	3.9	115-120	74.1
385-390	5.5	245-250	4.8	110-115	31.8
380-385	5.1	240-245	5.9	105-110	9.0
375-380	6.8	235-240	8.3	100-105	6.4
370-375	4.0	230-235	5.6	95-100	15.9
365-370	3.6	225-230	2.8	90-95	5.6
360-365	5.1	220-225	4.5	85-90	15.0
355-360	2.7	215-220	4.1	80-85	9.5
350-355	4.8	210-215	8.9	75-80	55.8
345-350	2.6	205-210	2.1	70-75	26.4
340-345	3.3	200-205	6.1	65-70	4.4
335-340	2.4	195-200	18.6	60-65	4.9
330-335	3.1	190-195	6.7	55-60	3.7
325-330	3.8	185-190	14.4	50-55	4.3
320-325	3.1	180-185	13.1	45-50	1.8
315-320	2.6	175-180	25.9	40-45	7.1
310-315	2.8	170-175	29.0	35-40	3.1
305-310	2.4	165-170	6.4	30-35	4.1
300-305	2.5	160-165	18.1	25-30	4.6
292½-300	1.6	155-160	9.0	20-25	4.4
285-290	22.0	150-155	9.3	15-20	6.0
280-285	38.4	145-150	19.3	10-15	10.8
275-280	17.4	140-145	34.2	5-10	1.8
270-275	16.8	135-140	91.8	0-5	6.9
265-270	10.4	129-135	74.3		

Sandy Post Office Area Stratigraphic Sections

Wise (1964) mapped the Sandy Post Office area and in four sections, Rosa Ranch, Sandy Post Office, Hickory Creek, and Gipson Ranch, was able to measure the upper 65 feet of Hickory Sandstone, 406 feet of Cap Mountain Limestone (some faulted out), 56 feet of Lion Mountain Sandstone, 6 feet of Welge Sandstone, 137 feet of Morgan Creek Limestone, and 25 feet of Point Peak Member. The fossil lists in the following sections were updated by Bell during August and September 1969. The lines of sections are shown on the Geologic Map of the Johnson City Quadrangle (Barnes, 1963).

Description of Gipson Ranch Section

The base of the section is near the top of the Cap Mountain Limestone at a point about 2,500 feet west-southwest of the mouth of Hickory Creek. The corrected thickness of the Morgan Creek Limestone is 137 feet allowing 12 feet for beds repeated by faulting.

Description	Thickness in feet: Interval	Cumulative	Feet above base
Moore Hollow Group: 222 feet described			
Wilberns Formation: 180 feet described			
Point Peak Member: 25 feet thick			
1. Limestone--fine-grained, gray to brownish-gray, silty, thinly bedded, beds range from less than 1 to about 3 inches.	25	25	197-222
Fossils collected from 204 feet, *Pseudagnostus* cf. *P. communis* (Hall and Whitfield), *Ellipsocephaloides silvestris* Resser, *Saratogia modesta* (Lochman and Hu), *Pelagiella* sp., hexactinellid spicules, and linguloid; from 210 feet, *Pseudagnostus* cf. *P. communis* (Hall and Whitfield), *Ellipsocephaloides silvestris* Resser, *Saratogia modesta* (Lochman and Hu), and hexactinellid spicules; from 214 feet, *Ellipsocephaloides silvestris*			

Description	Thickness in feet: Interval	Cumulative	Feet above base
Resser, tiny silicified Ellipsocephaloides, agnostid, conaspid?, and hexactinellid spicules.			
Morgan Creek Limestone Member:			
(thickness corrected for duplication by faulting is 137 feet, instead of 149 feet as measured)			
2. Limestone--medium- to coarse-grained, gray to brownish-white weathering to light brown, sparingly glauconitic, microgranular stromatolitic limestone beds common; beds 6 inches to 2 feet thick, top 15 feet poorly exposed.	40	65	157-197
Fossils collected from 159 feet, Pseudodicellomus mosaicus (Bell), Billingsella sp., Sinuella minuta Knight, and Pseudagnostus cf. P. communis (Hall and Whitfield); from 165 feet, Billingsella sp., Idahoia lirae (Frederickson), var. A Bell in Bell and Ellinwood, and Sinuella minuta Knight; from 167 feet, Angulotreta sp., Sinuella minuta Knight, Pseudagnostus cf. P. communis (Hall and Whitfield), Idahoia lirae (Frederickson), Idahoia lirae (Frederickson), var. A Bell in Bell and Ellinwood, Wilbernia sp., linguloid type B, and spicules; from 168 feet, Pseudagnostus cf. P. communis (Hall and Whitfield), Idahoia lirae (Frederickson), Idahoia lirae (Frederickson), var. A Bell in Bell and Ellinwood, Wilbernia diademata (Hall), Sinuella minuta Knight, and pygidium; from 169 feet, Sinuella minuta Knight, Pseudagnostus cf. P. communis (Hall and Whitfield), Idahoia lirae (Frederickson), Idahoia lirae (Frederickson), var. A Bell in Bell and Ellinwood, Idahoia? sp. pygidia, linguloid type B, and spicules; from 171 feet, Angulotreta sp., Idahoia			

Description	Thickness in feet: Interval	Cumulative	Feet above base
lirae (Frederickson), Idahoia lirae (Frederickson), var. A Bell in Bell and Ellinwood, Wilbernia diademata (Hall), Wilbernia expansa Frederickson, pygidium, linguloid type B, and spicules; from 173 feet, Billingsella texana Bell, Huenella texana (Walcott), Pseudagnostus cf. P. communis (Hall and Whitfield), Saratogia americana (Lochman and Hu), pygidium, and pelmatozoan stem; from 175 feet, Pseudodicellomus mosaicus (Bell), Billingsella sp., Huenella texana (Walcott), Sinuella minuta Knight, and columnals; from 180 feet, Angulotreta sp., Drumaspis texana Resser, Saratogia americana (Lochman and Hu), Saratogia fria (Lochman and Hu), Sinuella minuta Knight, syntrophid?, and hexactinellid spicules; from 183 feet, Angulotreta sp., Sinuella minuta Knight, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis texana Resser, Ptychaspis bullasa Lochman and Hu, Saratogia americana (Lochman and Hu), Saratogia fria Lochman and Hu, Wilbernia pero (Walcott), hyolithid, and linguloid; from 184 feet, Sinuella minuta Knight; from 185 feet, Billingsella sp., Pseudagnostus cf. P. communis (Hall and Whitfield), and Drumaspis texana Resser: from 188 feet, Wilbernia expansa Frederickson; from 195 feet, Billingsella texana Bell, Pseudagnostus cf. P. communis (Hall and Whitfield), Drumaspis idahoensis Resser, Ptychaspis bullasa Lochman and Hu, Saratogia modesta (Lochman and Hu), Wilbernia expansa Frederickson, Sinuella minuta Knight, pygidia, acrotretoid, fragment of linguloid, and hexactinellid spicules.			
3. Limestone--medium- to coarse-grained, some beds seem to contain recrystallized ooids but these may be particles of reworked limestone; sparingly	39	104	118-157

Description	Thickness in feet: Interval	Cumulative	Feet above base
glauconitic stromatolitic beds common, beds range from 2 inches to over 1 foot. Fault at 145 feet repeats 12 feet of section.			
Fossils collected from 118 feet, Angulotreta microscopica digitalis Bell, Pseudodicellomus mosaicus (Bell), Billingsella coloradoensis (Shumard), Billingsella aff. texana Bell, Eoorthis remnicha (Winchell), Comanchia amplooculata (Frederickson), Parabolinoides contractus Frederickson, Parabolinoides granulosus Ellinwood, and linguloids types A and B; from 119 feet, Angulotreta microscopica (Shumard), Billingsella coloradoensis (Shumard), Billingsella aff. texana Bell, Orygmaspis llanoensis (Walcott), var. A Longacre, and Pelagiella sp.; from 120 feet, Angulotreta microscopica (Shumard), Billingsella coloradoensis (Shumard), Orygmaspis llanoensis (Walcott), Orygmaspis llanoensis (Walcott), var. A Longacre, Taenicephalus gouldi (Frederickson), and Pelagiella sp.; from 123 feet, Billingsella coloradoensis (Shumard), Huenella abnormis (Walcott), Conaspis testudinatus Ellinwood, and Orygmaspis llanoensis (Walcott); from 124 feet, Angulotreta microscopica (Shumard), Billingsella coloradoensis (Shumard), Huenella abnormis (Walcott), Conaspis cf. C. testudinatus Ellinwood, Orygmaspis llanoensis (Walcott), and columnals; from 126 feet, Angulotreta sp., Pseudodicellomus mosaicus (Bell), Billingsella coloradoensis (Shumard), Conaspis testudinatus Ellinwood, Taenicephalus shumardi (Hall), and linguloid type B; from 127 feet, Angulotreta sp., Pseudodicellomus mosaicus (Bell), Billingsella sp., and Taenicephalus shumardi (Hall); from 131 feet, Pseudodicellomus mosaicus			

Description	Thickness in feet: Interval	Cumulative	Feet above base
(Bell), Billingsella aff. B. texana Bell, and Taenicephalus shumardi (Hall); from 133 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella texana Bell, Pseudagnostus cf. P. communis (Hall and Whitfield), Taenicephalus shumardi (Hall), and pelmatozoan calyx; from 137 feet, Taenicephalus shumardi (Hall), and orthid brachiopod; from 140 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella cf. B. texana Bell, Wilbernia halli Resser, var. A Ellinwood, conaspids?, orthid brachiopod, and linguloid type B; from 144 feet, Angulotreta microscopica (Shumard), Pseudodicellomus mosaicus (Bell), Billingsella sp., Taenicephalus shumardi (Hall), Wilbernia halli Resser, var. A Ellinwood, and linguloid type B; from 148 feet, Angulotreta sp., Pseudodicellomus mosaicus (Bell), Billingsella texana Bell, and Taenicephalus shumardi (Hall).			
4. Limestone--fine- to coarse-grained, green-gray to dull-white weathering to gray-brown, moderately glauconitic.	30	134	88-118
Fossils collected from 88 feet, Linnarssonella girtyi Walcott and linguloid type A; from 92 feet, Linnarssonella girtyi Walcott, Irvingella major Ulrich and Resser, Kindbladia wichitaensis (Resser), and linguloid type A; from 98 feet, Linnarssonella girtyi Walcott, Homagnostus tumidosus (Hall and Whitfield), and Cliffia lataegenae (Wilson); from 101 feet, Linnarssonella girtyi Walcott, and Xenocheilos minutum Wilson; from 107 feet, Linnarssonella girtyi Walcott Dellea suada (Walcott), Elvinia roemeri (Shumard), and Pterocephalia sanctisabae Roemer; from 110 feet, Linnarssonella girtyi Walcott, Angulotreta sp., Burnetiella urania (Walcott), Camaraspis convexa (Whitfield), Cliffia lataegenae (Wilson), Deckera			

	Description	Thickness in feet: Interval	Cumulative	Feet above base
	completa Wilson, Dellea saratogensis (Resser), aff. Dellea saratogensis (Resser), Dellea suada (Walcott), Dokimocephalus intermedius (Resser), Elvinia roemeri (Shumard), and linguloid type A; from 115 feet, Linnarssonella girtyi Walcott, Elvinia roemeri (Shumard), and Morosa simplexa Stitt; from 117 feet, Linnarssonella girtyi Walcott, Camaraspis convexa (Whitfield), Cliffia lataegenae (Wilson), Deckera completa Wilson, Dellea suada (Walcott), Dellea saratogensis (Resser), Dokimocephalus sp., Morosa? bothra Stitt, Pterocephalia sanctisabae Roemer, aff. Sulcocephalus candidus (Resser), and Ocnerorthis sp.			
5.	Limestone and sandstone--limestone fine- to coarse-grained, moderately glauconitic, silty and sandy grading downward into fine- to medium-grained sandstone, gray weathering to gray-brown, calcareous, silty; section forms a steep bluff, beds well-exposed.	40	174	48-88
	Fossils collected from 55 feet, Linnarssonella girtyi Walcott, Homagnostus tumidosus (Hall and Whitfield), Dunderbergia sp., Elburgia aff. E. granulosa (Hall and Whitfield), Elvinia roemeri (Shumard), Oligometopus aff. O. breviceps (Walcott), Pseudosaratogia aff. P. magna Wilson, and linguloid type A; from 63 feet, Linnarssonella girtyi Walcott, and linguloid type A; from 75 feet, Linnarssonella girtyi Walcott, Pseudagnostus cf. P. communis (Hall and Whitfield), Kindbladia affinis (Walcott), and linguloid type B; from 80 feet, Linnarssonella girtyi Walcott, Pseudagnostus cf. P. communis (Hall and Whitfield), Elvinia roemeri (Shumard), Kindbladia affinis (Walcott), Plataspella anatina (Resser), and linguloid			

Description	Thickness in feet: Interval	Cumulative	Feet above base
type B; from 85 feet, Linnarssonella girtyi Walcott, Irvingella major Ulrich and Resser, and Kindbladia affinis (Walcott); from 88 feet, Linnarssonella girtyi Walcott and linguloid type A.			
Welge Sandstone Member: 6 feet thick			
6. Sandstone--medium- to coarse-grained green-gray weathering to brown, glauconitic, quartz sand round to subround grains, very calcareous, cross-bedded; forms a steep cliff.	6	180	42-48
Fossils collected from 42 feet, Linnarssonella girtyi Walcott, Dunderbergia cf. D. nitida (Hall and Whitfield), Pterocephalia sanctisabae Roemer, and linguloids types A and B; from 46 feet, Linnarssonella girtyi Walcott, Homagnostus tumidosus (Hall and Whitfield), Elburgia aff. E. granulosa (Hall and Whitfield), Elvinia roemeri (Shumard), Iddingsia sp., Pseudosaratogia aff. P. magna Wilson, Pterocephalia sanctisabae Roemer, and undet. pygidium; from 47 feet, Linnarssonella girtyi Walcott, Homagnostus tumidosus (Hall and Whitfield), Cheilocephalus aff. C. stcroixensis Berkey, Dunderbergia sp., Elburgia aff. E. granulosa (Hall and Whitfield), Elvinia roemeri (Shumard), Iddingsia robusta (Walcott), Oligometopus aff. O. breviceps (Walcott), Pseudosaratogia aff. P. magna Wilson, Pterocephalia sanctisabae Roemer, and undet. pygidium.			
Riley Formation: 42 feet measured			
Lion Mountain Sandstone Member: 41 feet measured			
7. Limestone and sandstone--interval is believed to be faulted and measured thickness is probably in error; this interval is described in the Hickory Creek section 700 feet to the west.	41	221	1-42

Description	Thickness in feet: Interval	Cumulative	Feet above base
Fossils collected from 1 foot, *Coosia* cf. *C. albertensis* Resser, *Kingstonia* (*Ucebia*) *pontotocensis* (Lochman), *Tricrepicephalus thoosa* (Walcott), and undet. pygidia; from 7 feet, *Angulotreta triangularis* Palmer, *Angulotreta triangularis digitalis* Palmer, and aphelaspids; from 8 feet, *Angulotreta triangularis* Palmer, ?*Taenora* cf. *platifrons* (Palmer), aphelaspids, and linguloid type A; from 9 feet, *Angulotreta triangularis* Palmer, *Listroa longifrons* (Palmer), and aphelaspids; from 10 feet, cf. *Listroa longifrons* (Palmer); from 24 feet, *Angulotreta triangularis* Palmer, *Pseudagnostus* cf. *P. communis* (Hall and Whitfield), and *Blandicephalus texanus* Palmer; from 25 feet, *Apsotreta expansa* Palmer, *Blandicephalus texanus* Palmer, *Dunderbergia* n. sp. 2, *Dytremacephalus* cf. *D. granulosus* Palmer, and linguloids types A and B; from 36 feet, *Apsotreta expansa* Palmer, *Dunderbergia variagranula* Palmer, *Pterocephalia* sp., and linguloid type B.			
Cap Mountain Limestone Member: 1 foot measured			
8. Limestone--medium-grained gray.	1	222	0-1
Fossils collected from 1 foot, *Coosia* cf. *C. albertensis* Resser, *Kingstonia* (*Ucebia*) *pontotocensis* Lochman, *Tricrepicephalus thoosa* (Walcott), and undetermined pygidia.			

Description of Hickory Creek Section

The base of the Hickory Creek section is 1.55 miles due south of Sandy Post Office at the Hickory Sandstone-Cap Mountain Limestone contact just west of a stock tank dam. The Cap Mountain Limestone and Lion Mountain Sandstone Members of the Riley Formation comprise this section.

Description	Thickness in feet: Interval	Cumulative	Feet above base
Riley Formation: 462 feet measured			
Lion Mountain Sandstone Member: 56 feet thick			
1. Sandstone shale and covered--sandstone highly glauconitic, quartz sand, medium- to fine-grained, silty, dark-green and brown weathering to red-brown and yellow-brown, becoming more shaly at top, highly weathered unfossiliferous.	5	5	457-462
2. Sandstone and limestone--limestone medium-grained, gray, glauconitic; sandstone composed of glauconite and moderate amount of quartz; limestone beds common in lower part, only lenses and discontinuous beds present in upper part, weathers to bench with greensand beds mostly covered; trilobites and linguloid brachiopods abundant in limestone, absent in sandstone.	51	56	406-457

Fossils collected from 406 feet, Taenora? platifrons (Palmer), Angulotreta triangularis Palmer, Dictyonina perforata Palmer, Glaphyraspis oderi Rasetti, Listroa aff. L. longifrons (Palmer), and aphelaspids; from 407 feet, Aphelaspis walcotti Resser, Glaphyraspis ornata (Lochman), Dictyonina perforata Palmer, Angulotreta sp., aphelaspids, and linguloid type B; from 415 feet, Aphelaspis constricta Palmer, Cheilocephalus brevilobus (Walcott), Angulotreta triangularis Palmer, Listroa longifrons (Palmer), Angulotreta triangularis digitalis Palmer, and linguloid type B; from 418 feet, Angulotreta cf. A. triangularis Palmer, aphelaspid, and linguloid fragments; from 420 feet, Dytremacephalus sp., Angulotreta sp., aphelaspid, and linguloids types A and B; from 424 feet, Dicanthopyge cf. D. reductus Palmer, Dytremocephalus sp., Angulotreta triangularis Palmer,

Description	Thickness in feet: Interval	Cumulative	Feet above base
aphelaspids, and linguloid type B; from 427 feet, Taenora? platifrons (Palmer), Dunderbergia sp., Angulotreta triangularis Palmer, aphelaspid, and linguloid type B.			
Cap Mountain Limestone Member: 406 feet measured (a fault cuts out part)			
3. Limestone--medium- to fine-grained, light-gray weathering to light-brown, sparingly glauconitic, much of interval appears to be recrystallized oolite with most of original texture destroyed, stylolitic, beds generally over 1 foot thick, bedding planes obscure; interval well-exposed.	85	141	321-406
Fossils from 321 feet, Coosella sp., and Tricrepicephalus sp.; from 322 feet, Arcuolimbus convexus Palmer, Meteoraspis metra (Walcott), Kormagnostus simplex Resser, Pseudagnostus? nordica (Lochman), Tricrepicephalus thoosa (Walcott), Opisthotreta depressa Palmer, Kinsabia variegata Lochman, undet. pygidia and cephalon, and Micromitra sp.; from 325 feet, Arcuolimbus convexus Palmer, Coosella cf. C. granulosa Rasetti, Kormagnostus simplex Resser, Tricrepicephalus thoosa (Walcott), Tricrepicephalus texanus (Shumard), undet. cephalons (3) and pygidium, and linguloid fragments; from 330 feet, Opisthotreta depressa Palmer and Diraphora? sp.; from 347 feet, Diaphora? sp.; from 363 feet, Crepicephalus australis Palmer, Kingstonia (Ucebia) pontotocensis (Lochman), Tricrepicephalus thoosa (Walcott), and undet. pygidium; from 366 feet, Tricrepicephalus thoosa (Walcott), and pelmatozoan with arms?; from 368 feet, Kingstonia (Ucebia) pontotocensis (Lochman), Tricrepicephalus thoosa (Walcott), and pelmatozoan with arms?;			

Description	Thickness in feet: Interval	Cumulative	Feet above base
from 373 feet, Coosina cf. C. ariston (Walcott), Kingstonia (Ucebia) pontotocensis (Lochman), Llanoaspis modesta (Lochman), Tricrepicephalus thoosa (Walcott), Crepicephalus australis Palmer, and pelmatozoan with arms?; from 375 feet, Arcuolimbus aff. A. convexus Palmer, aff. Kormagnostus sp., Pseudagnostina? norica (Lochman), Tricrepicephalus sp., Homagnostus tumidosus (Hall and Whitfield), Diraphora? sp., undet. ?aff. Llanoaspis sp., and pelmatozoan with arms?; from 377 feet, Arcuolimbus sp., Crepicephalus australis Palmer, Meteoraspis metra (Walcott), Llanoaspis undulata Lochman, Tricrepicephalus sp., and Pelagiella sp.; from 385 feet, Llanoaspis sp., Tricrepicephalus thoosa (Walcott), and pelmatozoan with arms?; from 390 feet, Homagnostus tumidosus (Hall and Whitefield), Coosina cf. C. ariston (Walcott), and Ankura sp.; from 394 feet, Coosina cf. C. ariston (Walcott), Llanoaspis undulata granulata Palmer, Tricrepicephalus thoosa (Walcott), and pelmatozoan with arms?.			
Section offset along the top of the silty zone. Upper segment about 1,300 feet due south of lower segment and about 1,800 feet west of the mouth of Hickory Creek, on the south side of Pedernales River.			
4. Limestone, siltstone, and covered--limestone medium- to fine-grained, gray weathering to brown, sparingly to non-glauconitic; siltstone, sandy, light-brown weathering to reddish-brown, non-glauconitic, some beds non-calcareous; interval poorly exposed, unfossiliferous .	37	178	284-321
5. Limestone--fine-grained, gray weathering to brown, glauconite rare, silty	49	227	235-284

Description	Thickness in feet: Interval	Cumulative	Feet above base
in upper part, lower 35 feet has massive bedding with poorly defined bedding planes, upper part more thinly bedded and less well-exposed. Fossils collected from 243 feet, Apsotreta orifera Palmer; from 260 feet, Hardyoides sp.; from 282 feet, Apsotreta orifera Palmer, Opisthotreta depressa Palmer, and Kinsabia variegata Lochman; from 284 feet, Meteoraspis metra (Walcott) and Tricrepicephalus thoosa (Walcott).			
Section offset, originally by walking out beds; it is now believed that a fault crosses between the segments. Base of upper segment is at the base of a bluff along the bank of Hickory Creek, about 3,400 feet S. 45° E. of the top of the lower segment, which is near the crest of a prominent hill.			
6. Limestone--medium-grained, gray with brown patches, weathers to gray-brown, glauconite rare, a few oolitic beds are identical to the underlying unit, bedding ranges from 2 inches to more than 2 feet in thickness, well-exposed. Fossils collected from 232 feet, Arcuolimbus convexus Palmer, Kormagnostus simplex Resser, Meteoraspis metra (Walcott), Tricrepicephalus thoosa (Walcott), Opisthotreta depressa Palmer, and paterinid; from 234 feet, Tricrepicephalus thoosa (Walcott).	15	242	220-235
7. Limestone--oolitic, light gray-brown, ooids mostly darker brown with dark-brown centers, weathers to brownish-gray and dark-gray, oolitic texture	50	292	170-220

Description	Thickness in feet: Interval	Cumulative	Feet above base
in part obscured by recrystallization, almost no glauconite, quartz sand grains scarce, a few beds of fine-grained, sparingly glauconitic non-oolitic limestone; beds range from 2 inches to more than 2 feet, well-exposed. Fossils collected from 185 feet, Cedarina eurycheilos Palmer and Syspacheilus cf. S. camurus Lochman; from 193 feet, Brassicicephalus cf. B. puchellus Lochman, Kormagnostus simplex Resser, Syspacheilus durnoirensis Miller, Opisthotreta? sp., Angulotreta? sp., agnostid, and linguloid type B fragments.			
8. Limestone, sandstone, siltstone and covered--limestone, medium- to coarse-grained, gray with brown spots and streaks, weathers brown, moderately glauconitic, silty; sandstone, very fine grained, brown, silty, grades into siltstone, non-glauconitic, some beds non-calcareous; beds average 2 to 4 inches with some prominent beds up to 1 foot thick; much of interval covered. Fossils collected from 163 feet, Syspacheilus cf. S. dunoirensis Miller and Angulotreta postapicalis Palmer.	50	342	120-170
Section offset along prominent bed. Upper segment about 600 feet west of lower segment.			
9. Limestone and covered--limestone fine- to coarse-grained, gray with brown spots, weathers to brown glauconitic silty beds 4 inches to 1 foot thick; interval has an alternation of well-exposed beds and covered intervals.	57	399	63-120

Description	Thickness in feet Interval	Cumulative	Feet above base
Fossils collected from 84 feet, linguloid fragments and spicule type B; from 87 and 93 feet, Angulotreta postapicalis Palmer; Opisthotreta depressa Palmer, paterinid, and linguloid type B fragments; from 112 feet, Angulotreta postapicalis Palmer and linguloid fragments; from 120 feet, Syspacheilus sp. and Hardyoides sp.			
10. Limestone shale and covered--limestone medium- to coarse-grained, sparingly glauconitic, silty moderately abundant quartz sand; shale, silty, red to reddish-brown; almost all of interval covered.	63	462	0-63
Fossils collected from 1 foot, Bolaspidella sp. and linguloid fragments.			

Description of Sandy Post Office Section

The base of the Sandy Post Office section, 0.98 mile airline N. 79° E. from Sandy Post Office, is immediately southwest of Ranch Road 1323. The section follows the road southeastward about 900 feet to a fault along which Hickory Sandstone is in contact with Cap Mountain Limestone. The section includes the lowest exposed limestone bed and the base probably is very near the Hickory Sandstone-Cap Mountain Limestone contact. The type specimen of Angulotreta postapicalis Palmer (Locality 16T-6-10A) came from about 36 feet in this section.

Description	Thickness in feet Interval	Cumulative	Feet above base
Riley Formation: 48 feet measured			
Cap Mountain Limestone Member: 48 feet measured			
1. Limestone and covered--limestone fine- to coarse-grained, gray-brown to	18	18	30-48

Description	Thickness in feet: Interval	Cumulative	Feet above base
reddish-brown, very silty, sparingly glauconitic, beds range in thickness from 4 inches to 2 feet, averaging about 1 foot, some cross-bedding in the lower part of the section, but most beds show no internal stratification, not well-exposed, prominent ledge-forming beds present but much of the interval covered.			
Fossils collected from 34 feet, Cedarina cordillerae (Howell and Duncan), Syspacheilus cf. S. praecedens Lochman and Hu, Kormagnostus simplex Resser, and trilobite gen. and sp. undet.; from 36 feet, Opisthotreta depressa Palmer; from 39 feet, Angulotreta postapicalis Palmer.			
2. Limestone and covered--limestone gray to brown to reddish-brown, very glauconitic, silty, some cross-bedding, exposed beds average about 1 foot thick, few prominent beds, most of section covered.	30	48	0-30
Fossils collected from 25 and 26 feet, Angulotreta postapicalis Palmer; from 27 feet, Angulotreta postapicalis Palmer, Opisthotreta depressa Palmer, and linguloid frag.			

Originally collected by Bell and Barnes in 1947, near the trace of Wise's Sandy Post Office section.

Fossils from 4± feet, Angulotreta postapicalis Palmer; from 15.5± feet, Angulotreta postapicalis Palmer, and paterinid; from 21± feet, Angulotreta postapicalis Palmer, Opisthotreta depressa Palmer, paterinid fragment, and aglaspid fragment.

Description of Rosa Ranch Section

The base of the Rosa Ranch section is immediately northeast of Ranch Road 1323, at a point 1.2 miles S. 85° E. from Sandy Post Office. The section includes the lowest beds that crop out on the east side of a small intermittent stream and extends up slope southeastward about 1,800 feet to a point near a gate and cattle-guard leading to the J. H. Rosa and Sons Ranch.

Description	Thickness in feet: Interval	Cumulative	Feet above base
Riley Formation: 124 feet measured			
Cap Mountain Limestone Member: 59 feet measured			
1. Limestone--very fine grained, gray to reddish brown weathering to brown, silty, sparingly glauconitic, thick-bedded to massive, exposures limited; linguloid brachiopods common.	34	34	90-124
Fossils collected from 110 feet, indet. trilobite; from 111 and 119 feet, *Angulotreta postapicalis* Palmer.			
2. Limestone and covered--limestone medium grained, gray-brown weathering to brown, glauconitic, silty with minor amount of quartz sand, thinly bedded, poorly exposed; most of section covered, inferentially shale and siltstone; shale, where exposed, silty, red-brown to light yellow-brown, some slightly calcareous; upper 18 feet of this interval all covered; fault of 30 to 50 feet displacement probably present at the top of interval. Lowest limestone bed coincides with the Cap Mountain-Hickory vegetational mapping boundary. No fossils found.	25	59	65-90
Hickory Sandstone Member: 65 feet measured			
3. Covered--probably shale.	10	69	55-65

	Description	Thickness in feet: Interval	Cumulative	Feet above base
4.	Sandstone--fine to very fine grained, red-brown to yellow-brown quartz sand, glauconitic, noncalcareous to moderately calcareous, friable, clay and mica flakes form bedding planes, beds range from less than 1 to 8 inches thick, thicker beds show internal cross-bedding, some ripple marks present, strike of cross-bedding and ripple marks northeasterly. Linguloid brachiopods common, and trails and burrows abundant on bedding planes.	10	69	55-65

Fossils from 11.5, 12, and 14 feet, linguloids; from 23 feet, Modocia sp.; from 25 feet, linguloid, Baltagnostus cf. B. centerensis (Resser), Bolaspidella prooculis Palmer, and Modocia sp.; from 26 and 27 feet, linguloids; from 34 feet, Bolaspidella prooculis Palmer, Modocia centralis Whitfield, and linguloid; from 35 feet, Baltagnostus cf. B. centerensis (Resser); from 36 feet, Baltagnostus cf. B. centerensis (Resser) and Bolaspidella wellsvillensis (Lochman and Denson); from 37 feet, Baltagnostus cf. B. centerensis (Resser) and Bolaspidella wellsvillensis (Lochman and Denson); from 49 feet, linguloid.

Fossil Locality Data for Spot Collections

During geologic quadrangle mapping by Barnes and geologic mapping in connection with the study of Ellenburger rocks by Cloud and Barnes, numerous fossil collections from Moore Hollow Group rocks were made from spot localities. Most of these localities are recorded on published or manuscript quadrangle maps and on maps in the Ellenburger report (Cloud and Barnes, 1948) but are without corresponding fossil lists in the various texts. Some of these localities are recorded on maps in the present report. To complete the information for these spot localities, fossil lists follow arranged by county, geologic unit within the county, and the quadrangle map or Ellenburger map involved is identified. The U.S. Geological Survey locality number is also given if one has been assigned.

A few collections are listed that are not within the area of a published map, and these are recorded on enlarged 1939-1940 aerial photographs (scale 8 inches = 1 mile) on file with the Bureau of Economic Geology and a generalized locality description is included with the fossil list.

Cloud's collections bear "TF" (Texas fossil) numbers, and these collections are lodged in the U.S. Geological Survey collections in Washington. Barnes' collections bear a three-part locality number in which the first part designates the county, the second part identifies a block of aerial photographs within a county, and the third part designates a particular photograph within a block. Letters following the third part identify individual collections made within the bounds of a particular photograph. Barnes' collections also are lodged in Washington. Many of these have been given a USGS number which ends in "-CO" and this number has been placed just below the county number or TF number. A few collections are recorded on aerial photographs that have not been incorporated into the county number system. These are actual photograph numbers starting with the call letters "CJC."

In addition to credits for fossil identification given in Part 1, we are indebted to M. E. Taylor and E. L. Yochelson for fossil identification for several collections in the following compilation, for checking identification of fossils in other collections, and for furnishing locality numbers for those collections originally sent to the U.S. Geological Survey by Barnes.

Locality	Quadrangle or area	Fossils
	BLANCO COUNTY	
	Hickory Sandstone Member	
16T-6-9A	Johnson City	Bolaspidella sp.
1786-CO		Modocia sp.
16T-6-10B	Johnson City	phosphatic brachiopods
16T-6-20A	Johnson City	Baltagnostus cf. B. centerensis (Resser)
1789-CO		Modocia cf. M. oweni (Meek and Hayden)
		Bolaspidella prooculis Palmer
	Cap Mountain Limestone Member	
16T-6-10A	Johnson City	Angulotreta sp.
(BEG 31063-1)		Crepicephalus sp.
(BEG 31063-2)		
16T-6-27A	Rocky Creek	linguloid
16T-6-31A	Rocky Creek	Cheilocephalus breviloba (Walcott)
		aphelaspid
16T-6-31B	Rocky Creek	Listroa longifrons? (Palmer)
		acrotretids
		linguloids
16T-6-31C	Rocky Creek	Coosina cf. C. ariston (Walcott)
		Crepicephalus cf. C. iowensis (Owen)
		Llanoaspis undulata Lochman
		Meteoraspis metra (Walcott)
		Tricrepicephalus thoosa (Walcott)
16T-6-31D	Rocky Creek	not found
	Lion Mountain Sandstone Member	
16T-5-61B	Blowout	linguloid
		Angulotreta triangularis Palmer
		Dictyonina perforata Palmer
		Homagnostus tumidosus (Hall and Whitfield)
		Dicanthopyge cf. D. reductus Palmer
		Taenora? sp.
		Glaphyoraspis sp.
16T-6-12A	Johnson City Nr. mouth Buffalo Cr.	Pterocephalia cf. P. concava Palmer
16T-6-24A	Johnson City	linguloids 2 sp.
		Apsotreta n. sp.
		Dytremacephalus cf. D. laevis Palmer
		Taenora? platifrons (Palmer)
16T-6-24B	Johnson City	Apsotreta expansa Palmer
		micromitrid fragment
		linguloids 2 sp.

Locality	Quadrangle or area	Fossils
	Morgan Creek Limestone Member	
16T-5-33A	Howell Mtn.	silicified brachiopods
16T-5-66D	See 16T-6-37B	
16T-6-23A	Johnson City	silicified brachiopods
16T-6-24C	Johnson City	brachiopods
16T-6-24D	Johnson City	silicified brachiopods
16T-6-24G	Johnson City ½ mi. NE of 6-24A	nested fossils in stromatolites
16T-6-34A	Rocky Creek	Billingsella aff. B. texana Bell pelmatozoan columnals sponge spicules
16T-6-34B	Rocky Creek	Billingsella aff. B. texana Bell Taenicephalus shumardi (Hall) Wilbernia halli Resser Angulotreta sp. micromitrid fragments linguloid fragments Pelagiella sp.
16T-6-35A	Rocky Creek	Billingsella coloradoensis (Shumard)
16T-6-35B	Rocky Creek	Angulotreta microscopica digitalis Bell Pseudodicellomus mosaicus Bell linguloid Billingsella coloradoensis (Shumard) Eoorthis remnicha (Winchell) Eoorthis indianola (Walcott) Comanchia amplooculata (Frederickson) Irvingella major Ulrich and Resser Parabolinoides granulosus Ellinwood Parabolinoides contractus Frederickson Wilbernia halli Resser
16T-6-36A	Rocky Creek	Cheilocephalus buttsi Resser Parabolinoides contractus Frederickson Eoorthis remnicha (Winchell) Billingsella coloradoensis (Shumard) Eoorthis indianola (Walcott) Angulotreta microscopica (Shumard) linguloid Pelagiella sp.
16T-6-37B	Rocky Creek	Billingsella texana Bell
16T-6-40A	Rocky Creek	Billingsella texana Bell Sinuella minuta Knight "ribbed" open-coiled snail? Pelagiella sp. merostome? fragments "receptaculitid" spicules? linguloid
16T-6-45A	Rocky Creek	Scaevogyra swezeyi Whitfield

Locality	Quadrangle or area	Fossils
		Point Peak Member
16T-6-37A	Rocky Creek	Billingsella texana Bell
		San Saba Member (dolomitic facies)
16T-2-46A	Pedernales Falls	Rasettia magna Ellinwood
		eurekid
		Finkelnburgia sp.
		Scaevogyra cf. S. elevata Whitfield
16T-2-46B	Johnson City	Finkelnburgia sp.
		Scaevogyra cf. S. swezeyi Whitfield
16T-2-56A	Johnson City	Plectotrophia sp. cf. P. bridgei Ulrich and Cooper
16T-2-57C	Johnson City	new cyrtocarinate ecculiomphalid gastropod genus
		Schizopea cf. S. elevata Ulrich and Bridge
		Dirachopea cf. D. normalis Ulrich and Bridge
		Stenopilus latus Ulrich
		saukiinid
		Finkelnburgia sp.
		Sinuopea sweeti (Whitfield)
16T-5-4A	Howell Mountain	Hypseloconus cf. H. elongatus Berkey
		Stenopilus pronus Raymond
16T-5-4B	Howell Mountain	Bayfieldia simata Winston and Nicholls
		Stenopilus latus Ulrich
16T-5-5A	Howell Mountain	Apheoorthis? sp.
1770-CO		Finkelnburgia sp.
		syntrophid brachiopod
		Keithiella patula Winston and Nicholls
		Rasettia wichitaensis (Resser)
		saukid trilobite
		Matherella sp.
		?Scaevogyra sp.
		?Proplina sp.
		?Sinuopea sp.
		?Hypseloconus sp.
		cephalopod, fairly large
16T-5-24A	Howell Mountain	Scaevogyra swezeyi Whitfield
16T-5-32A	Blowout	Owenella? sp.
16T-5-57C	Blowout	Hypseloconus elongatus Berkey
		Proplina barbeunsis (Whitfield)
16T-6-3A	Johnson City	Scaevogyra cf. S. swezeyi Whitfield
		Plethometopus obtusus Rasetti
16T-6-4A	Johnson City	Xenorthis sp.
1771-CO		Cloudia sp.
		Hypseloconus elongatus Berkey
		Proplina barabuensis (Whitfield)

Locality	Quadrangle or area	Fossils
		unidentified trilobites
		Anconochilus barnesi Knight
16T-6-5G	Johnson City	Dirachopea sp.
		cf. Finkelnburgia sp.
		n. gen. aff. Ecculiomphalus sp.
		cf. Hypseloconus sp.
16T-6-25A	Johnson City	Finkelnburgia sp.
		Stenopilus latus Ulrich
		Saukiella? sp.
		Scaevogyra sp.
16T-6-25C	Rocky Creek	Calvinella tenuisculpta Walcott
16T-6-33A	Rocky Creek	Plethometopus armatus (Billings)
		Hypseloconus elongatus Berkey
		cephalopod
16T-6-34C	Blowout	Plectotrophia? sp.
		Bayfieldia? sp.
		Rasettia? sp.
		fragment of large trilobite pygidium
		Hypseloconus elongatus Berkey
16T-6-36B	Rocky Creek	Apheoorthis sp.
		Briscoia llanoensis Winston and Nicholls
		Leiocoryphe sp.
		Plethometopus obtusus Rasetti
		Sinuopea sweeti (Whitfield)
16T-7-28A	Rocky Creek	Stenopilus 2 spp.
		Eurekia sp.
		aff. Saukia or Briscoia
		Sinuopea cf. sweeti (Whitfield)
		"Ophileta" primordialis

BURNET COUNTY

Cap Mountain Limestone Member(?)

27T-9-18B	Slaughter Gap area Locality not shown on photo	trilobites

Lion Mountain Sandstone Member

27T-8-36A	Plate 9, fig. 2	phosphatic brachiopods

Welge Sandstone Member

27T-8-27	Plate 9, fig. 2	trilobites
27T-8-36A	Plate 9, fig. 2	phosphatic brachiopods

Locality	Quadrangle or area	Fossils
	Point Peak Member	
27T-7-61A	Plate 7, fig. 17	silicified brachiopods
27T-9-5C	1¼ mi. NNW of Sudduth	Billingsella corrugata inornata Ellinwood
		very high-spired gastropod
27T-9-5D	1 1/8 mi. NNW of Sudduth	Angulotreta sp.
		Pseudodicellomus sp.
		Billingsella sp.
		Plectotrophia alata (Walcott)
		Dartonaspis wichitaensis (Resser)
		Ptychaspis sp.
27T-9-5E	1 mi. N of Sudduth	silicified brachiopods
27T-9-56D	Kingsland	silicified brachiopods
TF-272	Goodrich Ranch area	silicified brachiopods
TF-272a	Goodrich Ranch area	silicified brachiopods
	San Saba Member (calcitic facies)	
27T-9-3A	3¼ mi. S. of Burnet	Billingsella corrugata inornata Ellinwood
27T-9-56C	Kingsland	Finkelnburgia sp.
TF-28	1 5/8 mi. NNW of Sudduth	Not found
	San Saba Member (dolomitic facies)	
27T-5-57A	3½ mi. S. of Burnet	Proplina barabuensis (Whitfield)
		Hypseloconus sp.
		Stenopilus pronus Raymond
		Scaevogyra swezeyi Whitfield
27T-5-61C	1 mi. SE of Sudduth	Schizopea sp.
		Dirachopea sp.
		Sinuopea sp.
		Scaevogyra? cf. S. elevata Whitfield
27T-5-62C	Mormon Mill area	Scaevogyra swezeyi Whitfield
		Hypseloconus sp.
		trilobite fragments
27T-7-62A	Plate 7, fig. 17	Stenopilus latus Ulrich
		Bayfieldia binodosa (Hall)
		Owenella sp.
27T-8-15A	Plate 9, fig. 2	Hypseloconus sp.
		Scaevogyra swezeyi Whitfield
27T-8-25B	Plate 9, fig. 2	Finkelnburgia sp.
		Hypseloconus sp.
		Scaevogyra swezeyi Whitfield
27T-9-1A	2½ mi. SW of Burnet	trilobites
27T-9-1B	1 mi. SW of Burnet	Scaevogyra swezeyi Whitfield

Locality	Quadrangle or area	Fossils
		Scaevogyra cf. S. elevata Whitfield
		Stenopilus? sp.
		Hypseloconus sp.
		Proplina barabuensis (Whitfield)
		Matthevia variabilis Walcott
27T-9-1C	1¼ mi. SW of Burnet	Dirachopea sp.
27T-9-1D	2 mi. WSW of Burnet	Scaevogyra swezeyi Whitfield
		Hypseloconus sp.
		Stenopilus sp.
27T-9-4D	1½ mi. NNW of Sudduth	Scaevogyra swezeyi Whitfield
27T-9-7A	1 5/8 mi. SSW of Sudduth	Plectotrophia bridgei Ulrich and Cooper
		Billingsella sp.
27T-9-7B	1 3/8 mi. SSW of Sudduth	fossils in chert
27T-9-7C	2 mi. S. of Sudduth	Scaevogyra swezeyi Whitfield
		fragmentary trilobites
27T-9-7D	2 mi. S. of Sudduth	Finkelnburgia n. sp.
		Rasettia capax (Billings)
		Proplina barabuensis (Whitfield)
		Stenopilus pronus Raymond
27T-9-8C	2½ mi. S. of Sudduth	Stenopilus sp.
		Finkelnburgia? sp.
27T-9-13A	5½ mi. SW of Burnet	Proplina barabuensis (Whitfield)
27T-9-21A	4 3/4 mi. WSW of Burnet	Finkelnburgia? sp.
		Scaevogyra swezeyi Whitfield
		Stenopilus pronus Raymond
		Rasettia magna Ellinwood
27T-9-23A	5¼ mi. SW of Burnet	Scaevogyra cf. S. elevata Whitfield
		trilobite fragments
		pteropod fragments
27T-9-24A	2 mi. E of Longhorn Cavern	Eurekia granulosa Walcott
		Keithiella scapane Longacre
27T-9-56A	Kingsland	Schizopea sp.
		high-spired gastropod
27T-9-56B	Kingsland	Finkelnburgia sp.
		trilobite
		small high-spired gastropod
TF-261	UT 4621, Pl. 8	Euptychaspis sp.
1695-CO		Finkelnburgia sp.

GILLESPIE COUNTY

Hickory Sandstone Member

86T-1-5A	Blowout	linguloid brachiopods

Cap Mountain Limestone Member

86T-1-9C	Willow City	Dytremacephalus aff. n. sp. 1

Locality	Quadrangle or area	Fossils
		Taenora? platifrons Palmer
		linguloid brachiopod
		Angulotreta triangularis Palmer
86T-1-17A	Willow City	not found
86T-1-17B	Willow City	not found
86T-2-14J	Cave Creek School	Tricrepicephalus sp.
1805-CO		Coosina sp.
		orthid brachiopod
86T-4-3A	Willow City	trilobites
86T-4-11A	Willow City	not found
86T-4-11B	Willow City	not found
86T-4-11C	Willow City	not found
86T-4-11D	Willow City	girvanella?
86T-5-12A	Cave Creek School	not found
86T-11-9B	Live Oak Creek	trilobites
86T-11-18B	Live Oak Creek	trilobites
86T-13-2B	Hilltop	trilobites
86T-13-2C	Hilltop	girvanella
86T-13-2D1	Hilltop	Coosina cf. C. ariston (Walcott)
86T-13-2D2	Hilltop	Crepicephalus australis Palmer
86T-13-2D3	Hilltop	Tricrepicephalus thoosa (Walcott)
		Meteoraspis? sp.
86T-13-17A	Squaw Creek	trilobites and brachiopods
86T-13-19	See 159T-13-19	
86T-15-1A	Morris Ranch	poor material
86T-15-7A	Morris Ranch	trilobites
86T-15-8A	Morris Ranch	Aphelaspis sp.
		Cheilocephalus sp.
86T-16-1C	Squaw Creek	trilobites
	Lion Mountain Sandstone Member	
86T-1-17C	Willow City	trilobites
86T-13-19D	See 159T-3-35D	
1784-CO		
	Morgan Creek Limestone Member	
86T-1-9D	Willow City	Billingsella coloradoensis (Shumard)
		Eoorthis indianola (Walcott)
		Eoorthis remnicha (Winchell)
		Angulotreta microscopica (Shumard)
		Ceratreta hebes Bell
		linguloid
		Comanchia amplooculata (Frederickson)
		Irvingella major Ulrich and Resser
		Orygmaspis llanoensis (Walcott)
		Parabolinoides contractus Frederickson
		Pelagiella sp.

Locality	Quadrangle or area	Fossils
86T-1-16B	Willow City	Eoorthis sp.
86T-2-3D	See 16T-6-37B	
86T-2-20A	Stonewall	Billingsella sp.
		conaspid
86T-5-20A	Stonewall	Billingsella sp. (Discarded)
86T-5-20B	Stonewall	Billingsella texana Bell
1728-CO		
86T-10-2A	Hilltop	Taenicephalus shumardi (Hall)
1794-CO		Pelagiella sp.
		Billingsella texana Bell
		Elvinia roemeri (Shumard)
		Kindbladia sp.
86T-10-2Aa	Hilltop	Orygmaspis llanoensis (Walcott)
		Taenicephalus shumardi (Hall)
		Wilbernia halli Resser var. A, Ellinwood
		Billingsella coloradoensis (Shumard)
		Angulotreta microscopica (Shumard)
		Pseudodicellomus mosaicus Bell
		linguloid
86T-10-2B	Hilltop	Eoorthis sp.
86T-10-8B	Hilltop	Irvingella major Ulrich and Resser
1753-CO		Comanchia amplooculata (Frederickson)
		Sulcocephalus candidus (Resser)
		Eoorthis remnicha (Winchell)
		Eoorthis indianola (Walcott)
		Hyolithes sp.
		Billingsella coloradoensis (Shumard)
		Angulotreta microscopica (Shumard)
		Ceratreta hebes Bell
86T-13-19A	See 159T-3-35A	
86T-13-19B	Squaw Creek	Taenicephalus shumardi (Hall)
1758-CO		pelmatozoan columnals
86T-13-19C	Squaw Creek	Billingsella sp.
1782-CO		Pseudagnostus cf. P. communis (Hall and Whitfield)
		Saratogia fria Lochman and Hu
		Sinuella minuta Knight
86T-13-19F	Squaw Creek	Billingsella corrugata inornata Ellinwood
1769-CO		Idiomesus sp.
		Owenella sp.
		high-spired gastropod
		Briscoia? sp.
86T-16-1A	Squaw Creek	Taenicephalus shumardi (Hall)
		Billingsella coloradoensis (Shumard)
		Orygmaspis llanoensis (Walcott)
86T-16-8H	Squaw Creek	brachiopods and trilobites
86T-16-8I	Squaw Creek	Billingsella coloradoensis (Shumard)
1740-CO		Eoorthis remnicha (Winchell)
		Parabolinoides granulosus Ellinwood
		Parabolinoides contractus Frederickson

Locality	Quadrangle or area	Fossils
86T-16-8Ia	Squaw Creek	Orygmaspis llanoensis (Walcott)
7360-CO		Conaspis testudinatus Ellinwood
		Taenicephalus gouldi (Frederickson)
		Billingsella coloradoensis (Shumard)
		Pseudodicellomus mosaicus Bell
		acrotretid
86T-16-8J	Squaw Creek	Conaspis testudinatus Ellinwood
1643-CO		Orygmaspis llanoensis (Walcott)
		Pseudagnostus cf. P. communis (Hall and Whitfield)
		Taenicephalus shumardi (Hall)
		Billingsella coloradoensis (Shumard)
~~86T-16-8L~~	~~Squaw Creek~~	~~Briscoia sp.~~
		Bayfieldia binodosa (Hall)
		Saukiella pepinensis (Owen)
		Owenella sp.
86T-16-8N	Squaw Creek	not found
~~86T-16-10A~~	~~Squaw Creek~~	~~Apheoorthis sp.~~
		Keithiella scrupulosa Ellinwood
		Dikelocephalus sp.
		Owenella sp.
		pelmatozoan columnals

Point Peak Member

86T-1-9E	Willow City	Billingsella texana Bell
		Pelagiella? sp.
		Sinuella sp.
		spicules pelmatozoans
86T-1-14B	Willow City	trilobites
86T-2-14H	Willow City	Billingsella texana Bell
*86T-5-1B	Cave Creek School	Angulotreta microscopica (Shumard)
1713-CO		Linnarssonella girtyi Walcott
		Pseudodicellomus mosaicus Bell
		Billingsella coloradoensis (Shumard)
		Parabolinoides contractus Frederickson
		Pelagiella sp.
		Elvinia roemeri (Shumard)
		undet. trilobite
86T-10-2C	Hilltop	silicified brachiopods
86T-10-8A	Hilltop	not found
86T-10-8C	Hilltop	Billingsella sp.
1759-CO		
86T-10-8D	Hilltop	silicified alate Billingsella
86T-10-9A	Hilltop	trilobites
86T-10-15A	Hilltop	spicules
1781-CO		low- and high-spired gastropods

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*Mixed fauna; mapped as Point Peak, but collection may have included fossils from blocks of Morgan Creek Limestone from basal Cretaceous conglomerate.

Locality	Quadrangle or area	Fossils
		Hyolithes sp.
		"receptaculitid"
		Saukiella sp.
86T-10-15B	Hilltop	silicified brachiopods
86T-10-15C	Hilltop	brachiopods and gastropods
86T-10-15F	Hilltop	not found
86T-10-15G	Hilltop	not found
86T-10-15I	Hilltop	Plectotrophia sp. (silicified)
86T-13-19F	Squaw Creek	Billingsella corrugata inornata Ellinwood
		Idiomesus sp.
		saukid??
		Owenella sp.
		high-spired gastropod
86T-13-19G 1760-CO	Squaw Creek	Billingsella corrugata inornata Ellingwood
86T-13-19J	Squaw Creek	silicified brachiopods
86T-16-8Gb 7361-CO	Squaw Creek	Sinuella minuta Knight
		Billingsella texana Bell
		Pseudagnostus cf. P. communis (Hall and Whitfield)
		undet. trilobite pygidium
		San Saba Member (calcitic facies)
86T-10-15D 1724-CO	Hilltop	Billingsella sp.
86T-10-15E 1729-CO	Hilltop	Billingsella sp.
86T-10-15H	Hilltop	Owenella sp.
86T-13-2A 1780-CO	Hilltop	"Corbinia" sp.
86T-13-14A	Squaw Creek	trilobites
86T-13-14Aa	Squaw Creek	Saukia cf. S. imperatrix Ulrich and Resser
		Stenopilus latus Ulrich
86T-13-14B	Squaw Creek	Euptychaspis kirki Kobayashi
		Eurekia eos (Hall)
		Saukiella junia (Walcott)
86T-13-14Ba	Squaw Creek	Bayfieldia binodosa (Hall)
		Euptychaspis typicalis Ulrich
		Saukiella junia (Walcott) var. A. Winston and Nicholls
86T-13-14C 1749-CO	Squaw Creek	Rasettia capax (Billings)
		Rasettia magna Ellinwood
		Rasettia wichitaensis (Resser)
		Stenopilus pronus Raymond
		Leiocoryphe occipitalis Rasetti

Locality	Quadrangle or area	Fossils
		Hyolithes sp.
		"receptaculitid"
		Saukiella sp.
86T-10-15B	Hilltop	silicified brachiopods
86T-10-15C	Hilltop	brachiopods and gastropods
86T-10-15F	Hilltop	not found
86T-10-15G	Hilltop	not found
86T-10-15I	Hilltop	Plectotrophia sp. (silicified)
86T-13-19F	Squaw Creek	Billingsella corrugata inornata Ellinwood
		Idiomesus sp.
		saukid??
		Owenella sp.
		high-spired gastropod
86T-13-19G 1760-CO	Squaw Creek	Billingsella corrugata inornata Ellingwood
86T-13-19J	Squaw Creek	silicified brachiopods
86T-16-8Gb 7361-CO	Squaw Creek	Sinuella minuta Knight
		Billingsella texana Bell
		Pseudagnostus cf. P. communis (Hall and Whitfield)
		undet. trilobite pygidium

San Saba Member (calcitic facies)

86T-10-15D 1724-CO	Hilltop	Billingsella sp.
86T-10-15E 1729-CO	Hilltop	Billingsella sp.
86T-10-15H	Hilltop	Owenella sp.
86T-13-2A 1780-CO	Hilltop	"Corbinia" sp.
86T-13-14A	Squaw Creek	trilobites
86T-13-14Aa	Squaw Creek	Saukia cf. S. imperatrix Ulrich and Resser
		Stenopilus latus Ulrich
86T-13-14B	Squaw Creek	Euptychaspis kirki Kobayashi
		Eurekia eos (Hall)
		Saukiella junia (Walcott)
86T-13-14Ba	Squaw Creek	Bayfieldia binodosa (Hall)
		Euptychaspis typicalis Ulrich
		Saukiella junia (Walcott) var. A. Winston and Nicholls
86T-13-14C 1749-CO	Squaw Creek	Rasettia capax (Billings)
		Rasettia magna Ellinwood
		Rasettia wichitaensis (Resser)
		Stenopilus pronus Raymond
		Leiocoryphe occipitalis Rasetti

Locality	Quadrangle or area	Fossils
86T-13-19H	Squaw Creek	not located
86T-13-19I	Squaw Creek	not located
86T-13-19L	Squaw Creek	algae (?) (to J. H. Johnson)
86T-13-20A	Squaw Creek	Saukiella junia (Walcott)
1761-CO		
86T-13-20B	Squaw Creek	Saukiella sp.
1754-CO		Owenella sp.
86T-13-20E	Squaw Creek	Plethometopus convexus (Whitfield)
1765-CO		Rasettia magna Ellinwood
86T-13-20F	Squaw Creek	Rasettia magna Ellinwood
1684-CO		
86T-13-20G	Squaw Creek	Saukiella junia (Walcott) var. B.
1685-CO		Winston and Nicholls
		Dikelocephalus?? sp.
		Finkelnburgia sp.
86T-13-20H	Squaw Creek	Saukiella junia (Walcott) var. B
1683-CO		Winston and Nicholls
86T-16-1B	Squaw Creek	Billingsella sp.
86T-16-2B	Squaw Creek	not located
86T-16-8Aa	Threadgill Creek	not located
	Just E of mile	
	post 32.3	
86T-16-8C	Threadgill Creek	Owenella sp.
1727-CO		billingsellid
		pelmatozoan columnals and plates
		Bowmania americana (Walcott)
		Bayfieldia simata Winston and Nicholls
86T-16-8D	Threadgill Creek	Euptychaspis jugalis Winston and Nicholls
		Saukiella junia (Walcott) var. A. Winston
		and Nicholls
		Owenella sp.
86T-16-8E	Threadgill Creek	brachiopods
86T-16-8F	Threadgill Creek	brachiopods and trilobites
86T-16-8Ga	Threadgill Creek	girvanella?
1763-CO		
86T-16-8K	Threadgill Creek	ancestral Lytospira
86T-16-8L	Threadgill Creek	Briscoia sp.
		Bayfieldia binodosa (Hall)
		Saukiella pepinensis (Owen)
		Owenella sp.
86T-16-9D	Squaw Creek	Symphysurina brevispicata Hintze
1756-CO		
86T-16-9E	Squaw Creek	Symphysurina brevispicata Hintze
1757-CO		Hystricurus cf. H. sp. D. Ross
86T-16-9F	Squaw Creek	not located
86T-16-9G	Squaw Creek	Bayfieldia binodosa (Hall)
		Saukiella junia (Walcott) var. B
		Winston and Nicholls
		Owenella sp.
86T-16-9H	Squaw Creek	trilobites and brachiopods
86T-16-9I	Squaw Creek	trilobites
86T-16-9J	Squaw Creek	Symphysurina brevispicata Hintze
2072-CO		

Locality	Quadrangle or area	Fossils
86T-16-9K	Squaw Creek	trilobites
86T-16-9L	Squaw Creek	trilobites
86T-16-10	Squaw Creek	Keithiella scrupulosa Ellinwood
1795-CO		Dikelocephalus? sp.
		Owenella sp.
		Apheoorthis sp.
		pelmatozoan columnals
86T-16-10A	Squaw Creek	brachiopods and trilobites
86T-16-14A	Threadgill	Saukiella junia (Walcott) var. B Winston and Nicholls
		Owenella sp.
86T-16-14B	Threadgill	Saukia tumida Ulrich and Resser
		Stenopilus latus Ulrich
86T-16-14C	Threadgill	Saukiella junia (Walcott) var. B Winston and Nicholls
86T-16-14D	Threadgill	not located
86T-16-14E	Threadgill	Saukiella junia (Walcott) var. A Winston and Nicholls
1766-CO		Euptychaspis jugalis Winston and Nicholls
86T-16-14F	Threadgill	trilobites
86T-16-14G	Threadgill	not located
86T-16-14I	Threadgill	not located
86T-16-14J	Threadgill	not located
86T-16-14K	Threadgill	Bayfieldia binodosa (Hall)
1767-CO		Saukiella junia (Walcott) var. B Winston and Nicholls
		Stenopilus latus Ulrich
		Euptychaspis typicalis Ulrich
		Idiomesus pygidium?
86T-16-14L	Threadgill	brachiopods
86T-16-20B	Threadgill	Bayfieldia simata Winston and Nicholls
		Euptychaspis jugalis Winston and Nicholls
		Euptychaspis kirki Kobayashi
		Eurekia eos (Hall)
		Idiomesus cf. I. Intermedium Rasetti
		Prosaukia remora Longacre
		Saukiella "norwalkensis"
TF-74	Langes Mill area	trilobites
TF-74a	Langes Mill area	gastropods

San Saba Member (dolomitic facies)

86T-1-17E	Willow City	algae?
86T-2-1C	Rocky Creek	Stenopilus sp.
1718-CO		?Heterocaryon sp.
		Scaevogyra sp.
		?Sinuopea sp.

Locality	Quadrangle or area	Fossils
*86T-2-1E	Rocky Creek	Scaevogyra swezeyi Whitfield Plethometopus sp.

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*The letter "E" missing on map.

86T-2-1F 1734-CO	Rocky Creek	Matthevia variabilis Walcott
86T-2-5A 1709-CO	Rocky Creek	Apheoorthis ornata Ulrich and Cooper Bowmania sagitta Winston and Nicholls Heterocaryon tuberculatum Rasetti Keithiella patula Winston and Nicholls Plethometopus sp. Triarthropsis nitida Ulrich
86T-2-7A	Rocky Creek	not located
86T-2-12A	Cave Creek School	not located
86T-2-12F	Rocky Creek	not located
86T-2-12G	Cave Creek School	Stenopilus latus Ulrich Scaevogyra sweeti Whitfield flat coiled gastropods
86T-2-12H	Cave Creek School	not located
86T-2-14G 1714-CO	Willow City	Plethometopus sp. Hypseloconus elongatus Berkey Proplina barabuensis (Whitfield) Anconochilus barnesi Knight ?Shelbyoceras sp.
86T-2-19A	Cave Creek School	Apheoorthis sp.
86T-3-8A	Stonewall	high-spired gastropod trilobites and brachiopods
86T-5-13A 1719-CO	Cave Creek School	Plethometopus armatus Bell and Ellinwood undet. trilobites, 2 genera at least Hypseloconus sp. Scaevogyra swezeyi Whitfield ?Shelbyoceras sp.
86T-5-24A	Palo Alto Creek	not found
86T-6-13A	Stonewall	not found

LLANO COUNTY

Cap Mountain Limestone Member

149T-7-7A	4 mi. WNW of Valley Spring	trilobites

Lion Mountain Sandstone Member

149T-1-36C (BEG 31059-3)	Plate 7, fig. 16	Aphelaspis sp.

Locality	Quadrangle or area	Fossils
149T-2-20A	Plate 7, fig. 21	phosphatic brachiopods
149T-2-20B	Plate 7, fig. 21	Dytremacephalus granulosus Palmer
		?Dellea sp.
		Apsotreta expansa Palmer
		linguloids
149T-4-1A	Plate 7, fig. 21	Aphelaspis sp.
		Angulotreta triangularis Palmer
		linguloid
149T-7-21C	Plate 7, fig. 12	Cheilocephalus cf. C. brevilobus (Walcott)
		Dunderbergia? sp.
		Dytremacephalus granulosus Palmer
		linguloids 2 sp.
	Welge Sandstone Member	
TF-414	UT 4621, Pl. 10	Lingulepis sp.
	Morgan Creek Limestone Member	
149T-1-36B (BEG 31059-2)	Plate 7, fig. 16	Huenella sp.
149T-1-37A	Plate 7, fig. 16	Eoorthis remnicha (Winchell)
		Eoorthis indianola (Walcott)
		Angulotreta microscopica (Shumard)
		Angulotreta microscopica digitalis Bell
		linguloid
149T-7-21B	Plate 7, fig. 12	Eoorthis indianola (Walcott)
		Eoorthis remnicha (Winchell)
		Billingsella coloradoensis (Shumard)
		Comanchia amplooculata (Frederickson)
		Irvingella major Ulrich and Resser
		linguloid
TF-278	UT 4621, Pl. 10	not found
TF-295	UT 4621, Pl. 10	Billingsella texana Bell
1698-CO		Taenicephalus shumardi (Hall)
TF-296	UT 4621, Pl. 10	Orygmaspis llanoensis (Walcott)
7368-CO		Huenella abnormis (Walcott)
		Conaspis testudinatus Ellinwood
		Billingsella coloradoensis (Shumard)
TF-297	UT 4621, Pl. 10	not found
TF-298	UT 4621, Pl. 10	Pseudagnostus communis (Hall and Whitfield)
1744-CO		Billingsella texana Bell
		Sinuella minuta Knight

Locality	Quadrangle or area	Fossils
	Point Peak Member	
149T-1-36A (BEG 31059-1)	Plate 7, fig. 16	Plectotrophia bridgei Ulrich and Cooper
TF-279	UT 4621, Pl. 10	Billingsella texana Bell
1691-CO		Sinuella minuta Knight
		Chariocephalus whitfieldi Hall
		Wilbernia pero Walcott
TF-207	UT 4621, Pl. 10	Rasettia magna Ellinwood
		Briscoia? sp.
		indet. trilobite
		gastropod
		Hypseloconus? sp.
TF-365	UT 4621, Pl. 10	Bayfieldia binodosa (Hall)
TF-366	UT 4621, Pl. 10	Billingsella aff. B. rhomba Ellinwood
	San Saba Member (dolomitic facies)	
TF-201	9 mi. SE of Llano	Stenopilus pronus Raymond
1804-CO		gastropod, low-spired
	MCCULLOCH COUNTY	
	Lion Mountain Sandstone Member (actual photograph number)	
CJC-4-32A	Plate 8, fig. 2	brachiopods
	Morgan Creek Limestone Member (actual photograph number)	
CJC-4-32B	Plate 8, fig. 2	Angulotreta sp.
CJC-4-35A	Plate 8, fig. 2	silicified brachiopods
	San Saba Member (calcitic facies)	
TF-230	Plate 8, fig. 2	Highgatella n. sp.?
		Symphysurina brevispicata Hintze
		Hystricurus cf. H. sp. D Ross
		Apheoorthis ornata Ulrich and Cooper
		Homagnostus reductus Winston and Nicholls
		Schizambon australis Ulrich and Cooper
		Finkelnburgia sp.
		conodonts
		acrotretid
		spicules
		Pelagiella? sp.

Locality	Quadrangle or area	Fossils
TF-234 1739-CO	1½ mi. SE mouth of Loafer Creek	orthid brachiopod

MASON COUNTY

Cap Mountain Limestone Member

159T-13-19	Plate 8, fig. 4	Maryvillia? pygidium Crepicephalus sp. Coosella? sp. Tricrepicephalus texanus (Shumard)

Lion Mountain Sandstone Member

159T-3-35D 1784-CO	Plate 8, fig. 4	Aphelaspis walcotti Resser
159T-13-19	Plate 8, fig. 4	Dytremacephalus granulosus Palmer
159T-13-19Ka	Plate 8, fig. 4	Taenora? platifrons (Palmer) linguloids, 2 sp. Angulotreta triangularis Palmer

Morgan Creek Limestone Member

159T-3-35A 1735-CO	Plate 8, fig. 4	Comanchia amplooculata (Frederickson) Irvingella major Ulrich and Resser Eoorthis remnicha (Winchell) Eoorthis indianola (Walcott)
159T-3-35E	Plate 8, fig. 4	not found
TF-463 7370-CO	2.7 mi. SSW of Mason	Eoorthis indianola (Walcott) Eoorthis remnicha (Winchell) Irvingella major (Ulrich and Resser) Comanchia amplooculata (Frederickson)

Point Peak Member

159T-5-50A	3/4 mi. N mouth of Honey Creek	Ellipsocephaloids silvestris Resser Prosaukia tuberculata Ulrich and Resser graptolites (Decker, 1945) Just below graptolite zone: Idahoia lirae (Frederickson) Idahoia lirae (Frederickson) var. A Bell in Bell and Ellinwood Sinuella sp. Prosaukia sp. linguloid pelmatozoan

Locality	Quadrangle or area	Fossils
TF-464	2.9 mi. SSW of Mason	Mesonomia? sp.
	San Saba Member (calcitic facies)	
CJC-5-134	Plate 7, fig. 6	trilobites
159T-7-25A	Plate 7, fig. 6	Saukiella junia (Walcott) var. A Winston and Nicholls
		Saukiella pyrene (Walcott)
		Calvinella prethoparia Longacre
159T-8-34A	Plate 8, fig. 5	Symphysurina bubops Winston and Nicholls
		Homagnostus reductus Winston and Nicholls
		Highgatella cordilleri (Lochman)
		Missisquoia typicalis Shaw
		Hystricurus millardensis Hintze
159T-8-42A	Plate 8, fig. 5	Missisquoia typicalis Shaw
		Highgatella cordilleri (Lochman)
		Symphysurina bubops Winston and Nicholls
		Homagnostus reductus Winston and Nicholls
		Hystricurus millardensis Hintze
		Euconia sp.
		aff. Owenella sp.
TF-155	UT 4621, Pl. 5	Billingsella aff. B. corrugata inornata Ellinwood
TF-167	UT 4621, Pl. 5	Symphysurina brevispicata Hintze
		Jujuyaspis keideli Kobayashi
		Finkelnburgia sp.
		Hystricurus millardensis Hintze
		Homagnostus reductus Winston and Nicholls
TF-176	UT-4621, Pl. 5	Eurekia granulosa Walcott
		Keithiella sp. of Bell and Ellinwood
		Illaenurus quadratus Hall
		Euptychaspis frontalis Longacre
		*Saratogia fria Lochman and Hu
		*Drumaspis texana Resser
		Pseudagnostus cf. P. communis (Hall and Whitfield)
		Sinuella minuta Knight
		Pseudodicellomus mosaicus Bell
TF-221	Plate 7, fig. 6	Symphysurina brevispicata Hintze
		Hystricurus millardensis Hintze
		Jujuyaspis keideli Kobayashi
		Apheoorthis sp.
		Homagnostus reductus Winston and Nicholls
TF-222	Plate 7, fig. 6	Symphysirina brevispicata Hintze
1798-CO		Jujuyaspis keideli Kobayashi
		Hystricurus millardensis Hintze

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*Associations doubtful. Should be rechecked.

Locality	Quadrangle or area	Fossils
TF-223 1797-CO	Plate 7, fig. 6	Symphysurina brevispicata Hintze Jujuyaspis keideli Kobayashi Hystricurus millardensis Hintze Clelandia texana Winston and Nicholls ?Lophonema sp. ?Sinuella sp. Apheoorthis sp.

SAN SABA COUNTY

Lion Mountain Sandstone Member

205T-4-1A	Plate 7, fig. 14	phosphatic brachiopods

Morgan Creek Limestone Member

TF-43	UT 4621, Pl. 7	not found

Morgan Creek Limestone Member

205T-1-11C	Plate 7, fig. 17	Eoorthis sp. (discarded)
205T-4-1B	Plate 7, fig. 14	Eoorthis sp.
TF-461 7369-CO	UT 4621, Pl. 2	Eoorthis remnicha (Winchell) Billingsella coloradoensis (Shumard) Parabolinoides contractus Frederickson
TF-462	Plate 7, fig. 14	not found

Point Peak Member

205T-1-11B	Plate 7, fig. 17	high-spired gastropod trilobite free cheek
205T-4-1C	Plate 7, fig. 14	Plectotrophia alata (Walcott) Billingsella corrugata inornata Ellinwood large trilobite fragments
205T-4-1D	Plate 7, fig. 14	Billingsella rhomba Ellinwood
TF-9	UT 4621, Pl. 2	not found
TF-42 7362-CO	UT 4621, Pl. 2	Apheoorthis? sp. Plectotrophia alata (Walcott)
TF-45 7363-CO	UT 4621, Pl. 2	Billingsella corrugata inornata Ellinwood Hyolithes sp. ?Sinuella sp.
TF-53 7364-CO	UT 4621, Pl. 2	Billingsella rhomba Ellinwood

Locality	Quadrangle or area	Fossils
TF-54 1680-CO	UT 4621, Pl. 2	Billingsella corrugata inornata Ellinwood Plectotrophia alata (Walcott) trilobite debris
TF-55 2072-CO	UT 4621, Pl. 2	Symphysurina brevispicata Hintze
TF-56 1721-CO	UT 4621, Pl. 2	Billingsella corrugata inornata Ellinwood
TF-57	UT 4621, Pl. 2	not found
TF-60 7366-CO	UT 4621, Pl. 2	Plectotrophia alata (Walcott)
TF-68	UT 4621, Pl. 2	not found
TF-73 1746-CO	3½ mi. ESE of Cherokee	Billingsella corrugata inornata Ellinwood
TF-73 1799-CO	3½ mi. ESE of Cherokee	Plectotrophia alata (Walcott) Billingsella corrugata inornata Ellinwood dikelocephalids?
TF-117 1736-CO	UT 4621, Pl. 2	Billingsella rhomba Ellinwood

San Saba Member (dolomitic facies)

205T-1-11A	Plate 7, fig. 17	Scaevogyra elevata Whitfield Scaevogyra swezeyi Whitfield Sinuopea sp. Proplina or Archinacella large hyolithid
205T-1-23A	Plate 7, fig. 17	Scaevogyra sp.
205T-1-24A	Plate 7, fig. 17	Finkelnburgia? sp. Schizopea sp. or Dirachopea sp. Stenopilus sp. or Plethometopus sp. saukiinid pygidium
TF-58 7365-CO	UT 4621, Pl. 2	Plethometopus armatus (Billings) gastropod, bellerophontacean
TF-87 1696-CO	UT 4621, Pl. 2	not found