U N I V E R S I T Y O F T E X A S
BUREAU OF ECONOMIC GEOLOGY
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The mimeograph circulars issued from the Bureau of Economic Geology contain the record of cores and cuttings from wells received and described in the Bureau. In some instances drillers logs and other data are given although it is usually impracticable to include logs of all wells, the logs given being selected as representative of the county or area to which the circular relates. The elevations given are for the most part those reported with the drillers log. In some instances the elevation given, as indicated, is that obtained from the location of the well on the topographic map. In all cases the elevation is to be regarded as approximate only.

E. H. Sellards.

WELL RECORDS OF KIMBLE COUNTY

Beasley 1, Delvatex Petroleum Corporation

Located on Block G of the G. H. and S. A. lands; about 11 miles south-southeast of Junction. Elevation reported at 2100 feet.

Casing record: 15½" to 330'; 12½" to 944'.

Drillers log. (incomplate).

	Depth in Feet From	To	Thickness
Lime	0	385	385
Blue slate	385	400	15
Red rock	400	435	35
Black slate	435	460	25
Sandy lime	460	473	13
Water sand, red	473	602	129
White lime	602	620	18
Black slate	620	640	20
Red rock	640	665	25
Dark lime	665	694	29
Sand water	694	710	16
Red sand	710	742	32
Sand	742	815	73
Black slate	815	1165	350

Description of samples by H. T. Kniker: submitted by Ed B. Rich, Junction, Texas, and by M C Crispen, Menard, Texas, 1921.

White pulverized limestone and fragments of light yellowish limestone, containing some sand. In thin section two fragments of limestone are seen to have a fine grained texture with an occasional clear grain. A faint vein, and a few organic fragments are seen in one of these fragments. A third fragment shows a rather finely crystalline texture. Another fragment shows organic remains, mostly indistinct, in a fine-grained matrix, while/a fifth fragment there/are many organic fragments, partly replaced, in a partly granular and partly finely crystalline matrix. In an additional section rather large sponge spicules

Depth in Feet

were noted in one fragment. Several other fragments show oolitic organic fragmental texture, the matrix being clear and most of the organic fragments replaced. Lower Comanchean limestone; near.... 385

Light bluish gray marl and light yellowish limestone, the latter containing fine sand and a few pyrite concretions. In thin section one limestone fragment shows fine-grained slightly mottled texture. Two other fragments have the same texture and contain a number of unidentifiable foraminifera and a few other forms. Another fragment consists mostly of organic fragments embedded in a granular matrix. Oolitic organic fragmental texture was noted in one fragment. Three chara seeds with indistinct markings and a smooth ostracod were seen in washed material..... 385-400

Light reddish marl. Washed material consists of sandy limestone fragments and rounded etched sand grains. Some smooth ostracods, about half a dozen chara seeds, and several echinoid spines were noted. The chara seeds are ornamented with about eight sharp, distant ridges. Trinity..... 400-435

Gray sand and silt. The sand grains are etched and well rounded. No fossils were noted. Trinity..... 460-473

Well rounded etched sand, with some red marl. Most of the sand grains between one-half mm. and one mm. although the largest are two mm. in diameter..... 473-602

Like sample from 473-602..... .....

Yellowish and reddish rounded, etched sand and a few fragments of sandy limestone. Most of the sand grains are between one-half mm. and two mm. in diameter, the sand being coarser than that at 473-602..... 694-742

Rather light gray noncalcareous shale containing a few scattered mica scales and coaly shreds. In thin section the rock is seen to be sandy. Two Ammodisci were noted in fine washed material. When heated in closed tube bituminous fumes and ammonia fumes were liberated. From slush box. Pennsylvanian.. 815-1575

Light gray cherty limestone and black shale. In thin section some fragments of limestone appear to be pure and unchanged limestone, while others have been changed more or less to chert. Crinoid tissue and a number of fragments, distinct and indistinct, of organic remains, such as sponge spicules and an Endothyra were noted in thin sections of limestone fragments. The shale is noncalcareous and contains some pyrite. A few fragments of crinoid stems were seen in washed material. When sample was heated in closed tube, very strong bituminous fumes and very faint ammonia fumes were given off. Marble Falls Limestone..... 2360-2363

Very light gray cherty organic fragmental and oolitic limestone and black shale. In thin section the limestone is seen to be partly crystalline and partly granular in texture and

Depth in Feet

to contain an abundance of organic remains and many oolitic spherules of small size. Among these, small tubular bodies, two Endothyra, and sections of ostracods (?) were noted. The finely laminated noncalcareous shale contains some sand and pyrite. Much of the pyrite is in the form of slender cylindrical bodies, probably pyritized sponge spicules. When sample was heated in closed tube, bituminous fumes and very faint ammonia fumes were given off..... 2365-2370

Very light gray, almost white, fossiliferous limestone, partly replaced by chert, and a small amount of black shale such as found at 2365-2370'. In thin section of the limestone many organic fragments were seen embedded in a partly crystalline and partly granular matrix. Among the organic remains, a few large sponge spicules, an Endothyra (?), a Nodosaria (?), and an Ammodiscus were noted. When sample was heated in a closed tube, strong bituminous fumes forming a slight deposit of oil in tube, and very faint ammonia fumes were given off..... 2370-2375

Like sample from 2370-2375'. When heated in closed tube, strong bituminous fumes and very faint ammonia fumes were liberated..... 2375-2380

Very light gray, almost white, organic fragmental limestone, slightly cherty. In thin section of the limestone, many organic fragments were seen embedded in a granular and partly crystalline matrix. When sample was heated in closed tube, strong bituminous fumes and very faint ammonia fumes were given off..... 2380-2387

Very light gray, almost white, organic fragmental limestone. In thin sections the fragments show slightly mottled texture, very small granular areas being embedded in finely crystalline material. A minute Ammodiscus and some organic fragments were noted in these sections. Upon heating sample in closed tube, strong bituminous fumes and very faint ammonia fumes were liberated 2387-2395

Very light gray, almost white, organic fragmental limestone. In thin section two fragments of the rock show many tubular bodies embedded in a granular matrix. When sample was heated in closed tube strong bituminous fumes and very faint ammonia fumes were given off..... 2395-2400

Light green shale, gray dolomite, some gray shale, and a small amount of white chert. Several fragments of limestone and gray chert were also noted. The shale is extremely fine-grained, is non-calcareous, is "peppered" with minute pyrite crystals and aggregations of such crystals, and is more or less silicified. In thin section the dolomite is seen to be finely crystalline, the crystals measuring about one-twentieth mm. in diameter. The grey shale is sandy and calcareous. When sample was heated in closed tube bituminous fumes and very faint ammonia fumes were given off..... 2470

Black shale, gray dolomite, light green noncalcareous shale and limestone, gray chert, and some dark gray sandy,

Depth in Feet

impure limestone. The black shale is noncalcareous and contains considerable pyrite. One fragment of rock is composed partly of gray dolomite and green shale and another of chert and green shale. A few of the green shale fragments have been turned into chert. A fragment of a small quartz pebble was noted. In thin section two fragments of chert show rounded and angular finely granular bodies of various shapes and sizes embedded in a clear matrix. Healed fracturing probably accounts for the aspect of this rock, which in thin section closely resembles a phase of limestone in the Ellenburger, sometimes referred to as crush-breccia. When sample was heated in closed tube, bituminous fumes and very faint ammonia fumes were given off..... 2490-2510

Mostly gray dolomite and chert. A few fragments of light green shale and chert, and several of black shale and white chert are present. In thin section the dolomite is seen to be finely crystalline in texture, the crystals measuring about one-fifteenth mm. in diameter. One fragment contains some streaks and small oblong areas of fine granular material. Upon heating sample in closed tube, faint bituminous fumes were given off..... 2510-2525

Like sample from 2510-2525'. In thin section there were noted, besides the finely crystalline dolomite seen at 2510-2525', fragments which are composed of crystals about one-eighth mm. in size. When sample was heated in closed tube, faint bituminous fumes were given off..... 2540-2570

Finely ground very light gray limestone. In thin section this is seen to be fine-grained in texture. One curved regular vein and one irregular vein were noted, and a portion of one fragment consists of clear crystalline material in which lie embedded rounded and angular bodies of various sizes composed of granular material, resembling healed crush-breccia. Ellenburger 2570-2578

Very light gray, almost white limestone. In thin section it is seen to be fine-grained and finely mottled with occasional small areas of crustalline material..... 2570-2640

Finely ground light gray dolomite and white limestone and a small amount of white chert..... 2640-2650

Like sample from 2640-2650'..... 2650-2670

Samples from 2360 to 2400 feet are from the Marble Falls Limestone. The four samples from 2470 to 2540-2570 feet probably represent material from between the Bend and Ellenburger. Sample from 2570-2578 feet is Ellenburger.

E. O. Bodo 1, Dixie Oil Company.

Located on Section 80, J. S. Patterson Survey; begun September 1, 1926 and completed January 3, 1927. Elevation 1902 feet.

Drillers Log

	Depth in Feet From	To	Thickness
Gravel	0	10	10
White lime	10	30	20
Black lime	30	45	15
Brown mud	45	80	35
Black mud	80	[illegible]	15
Sandy lime	95	100	5
Grey lime (Fusilina)	100	150	50
Black shale	150	175	25
Broken sand	175	185	10
Sandy lime	185	200	15
Black sandy lime	200	240	40
Black mud	240	290	50
Black lime	290	310	20
White lime	310	375	65
Broken sand	375	385	10
Blue shale	385	392	7
Water sand ½ bailer per hr. wtr. at 400'	392	400	8
Gray sand, sulphur water at 450' within 75' of top could not bail down.	400	435	35
White sand	435	500	65
Broken sand	500	540	40
Blue mud	540	545	5
Broken sand	545	575	30
Blue sandy shale	575	585	10
Blue mud	585	600	15
Blue shale	600	625	25
Hard white lime--set 12½" csg. at 610'	625	640	15
Hard white lime	640	680	40
Brown lime	680	700	20
White lime	700	715	15
Brown lime	715	730	15
White lime	730	760	30
Brown lime	760	790	30
White lime	790	825	35
Brown lime	825	910	85
White lime	910	985	75
Blue shale	985	1000	15
Water sand, HFW	1000	1040	40
Blue shale, 10" csg. set at 1065'	1040	1065	25
Blue shale	1065	1100	35
White shale (sand and shale)	1100	1150	50
Blue shale	1150	1180	30
White lime	1180	1190	10
Sand, shale and lime	1190	1260	70
Blue shale	1260	1400	140
Water sand, HFW	1400	1405	5
Water sand, HFW	1405	1485	80

	Depth in Feet From	To	Thickness
Blue shale, under-reamed 10" to 1490'	1485	1490	5
Blue shale	1490	1560	70
Brown lime	1560	1570	10
Blue shale	1570	1612	42
White lime	1612	1660	48
White sandy lime	1660	1700	40
White lime	1700	1800	100
Blue shale	1800	1840	40
White lime	1840	1845	5
White shale (sand and shale)	1845	1870	25
Water sand, HFW	1870	1880	10
White lime; set 8" to 1900'	1880	1900	20
Blue shale	1900	1940	40
White lime	1940	1950	10
Black shale	1950	1960	10
White lime	1960	1970	10
White shale	1970	2010	40
Blue shale	2010	2065	55
Water sand, 3 blrs. per hr.	2065	2100	35
Broken lime	2100	2110	10
Hard white lime	2110	2130	20
Blue shale	2130	2150	20
White lime	2150	2170	20
Shale	2170	2192	22
Blue shale	2192	2210	18
White lime	2210	2225	15
Lime	2225	2300	75
Blue shale	2300	2330	30
White lime	2330	2335	5
Green shale	2335	2350	15
Broken lime	2350	2365	15
White lime	2365	2395	30
Hard white lime--show gas at 2435'	2395	2470	75
Hard brown lime	2470	2530	60
Soft gray lime	2530	2540	10
Hard brown lime	2540	2570	30
Hard brown lime	2570	2590	20
White lime, 5 blrs. at 2600'	2590	2605	15
Water sand, HFW at 2640'	2605	2640	35
Hard white lime	2640	2680	40
Hard white lime	2680	2735	55
White lime--top Bend at 2760'	2735	2770	35
Black lime	2770	2825	55
Gray sandy lime	2825	2860	35
Gray lime	2860	2885	25
White lime	2885	2900	15
Red shale	2900	2911	11
Red shale with quartz nodules, set 8" at 2925'; top of Ellenburger at 2925'	2911	2925	14
Gray lime	2925	2955	30
Hard white lime	2955	2965	10
Gray lime	2965	3000	35
Hard white lime	3000	3026	26
T. D. 3026' SLM			

This well starting in the upper Pennsylvanian terminates in the Ellenburger.

J. D. Fisher 1, Home Oil and Refining Company

Located on the J. M Rouse Survey; Section 226, about 12 miles north of Junction. Elevation reported as 1728 feet.

Drillers log. (incomplete).

	Depth in Feet From	To	Thickness
Surface soil	0	10	10
Red shale	10	85	75
Sand; 1-1/2 bailers water per hour	85	90	5
Red shale	90	130	40
Gravel; 8 bailers water per hour	130	140	10
Red shale	140	156	16
White lime	156	159	3
Red shale	159	166	7
Brown shale	166	169	3
White lime	169	174	5
Hard sand, fresh water, hole full	174	182	8
Red shale	182	218	36
Sand water, fresh, hole full	218	228	10
Red shale	228	235	7
Blue shale	235	372	137
White lime	372	376	4
Red rock	376	379	3
Blue shale	379	505	126
Gray lime	505	510	5
Blue shale	510	593	83
Sand water, fresh, hole full	593	635	42

Mears 1, Brazos-Menard Oil Syndicate, and Thomas-Ledlow

Located in the northeast quarter of Section 26, T. W. N. G. Railway Company lands, about 12 miles north of Junction. Elevation reported at 2222 feet. Standard drilling.

Casing record: 12½" to 552'; 12½" to 1400'; 10" to 1465'; 8" to 1987'; 6" to 2710'.

Drillers log.

White lime	1	30	30
Chalky lime	30	300	270
Sand, fresh water	300	350	50
Slate	350	375	25
Red rock	375	510	135
Sandy grit	510	540	30
Lime	540	570	30
Blue shale break	570	575	5
Lime	575	590	15
Blue shale break	590	605	15
Lime	605	660	55
Blue shale	660	800	120
White sand, water brackish	800	840	40
Black shale	840	930	90
Hard lime	930	1010	80
Sand, water brackish	1010	1040	30

	Depth in Feet From	To	Thickness
Blue shale	1040	1070	30
Sand, water brackish	1070	1075	5
Lime	1075	1100	25
Slate	1100	1150	50
Lime	1150	1170	20
Lime	1170	1400	230
Slate	1400	1436	36
Gas at 1436			
Sand, water brackish	1436	1460	24
Lime, water to 1480	1460	1700	240
Sand	1460	1480	20
Gray lime	1480	1500	20
White lime	1500	1550	50
Black break	1550	1552	2
Gray lime	1552	1600	8
Black lime	1600	1610	10
White lime	1640	1700	60
Black lime	1700	1730	30
Gray lime	1730	1800	70
White lime	1800	1850	50
Sand, water brackish	1850	1900	50
Gray lime	1900	1950	50
White lime	1950	2050	100
Gray lime	2050	2500	450
White lime	2500	2530	30
Gray lime	2530	2570	40
Pink lime	2570	2600	30
Blue slate	2600	2680	80
Red break	2680	2690	10
Sand, brackish water	2690	2695	5
Red rock	2695	2708	13
Gray lime, hard	2708	2790	82
White lime	2790	2850	60
Gray lime	2850	2940	90
White lime	2940	3000	60
Sand, water fresh	3000	3270	270
Gray lime	3270	3300	30
Pink lime, abandoned	3300	3340	40

Description of samples by E. L. Stiles and H. T. Kniker; submitted by O. G. Devenish, Fort Worth, Texas, 1920.

Gray slightly calcareous sandstone and dark gray sandy shale. Some grains of earthy limonite present. An echinoid spine was seen in washed material. 1855-1865

Gray and dark gray limestone. A small amount of shale and some pyrite present. In thin section the limestone shows some organic fragments in a matrix which is partly granular and partly crystalline. A small low spired gastropod, an ostracod valve, Productus spines and a Nodosinella lingulinoides were found in washed material. In closed tube faint bituminous fumes and strong fumes of ammonia were noted. Pennsylvanian. 1865-1950

Depth in Feet

Light gray and gray limestone. In thin section organic fragments are seen in a matrix of granular texture. In washed material Productus spines, echinoid spines, a small brachiopod cast, small crinoid joints and a Valvulina cf. palaeotrochus were seen. In closed tubes ammonia fumes were given off. 1976

Pure white finely granular and coarser crystalline calcite or limestone. No fossils were seen. A small amount of black-shale is present. Possibly an occurrence of travertine. Faint fumes of bitumen and ammonia noted. 2010-2040

Dark gray siliceous limestone. Sponge spicules and other ill defined organic fragments were seen. In closed tube bituminous fumes sufficient to sustain a flame were given off. Ammonia fumes also noted. 2130-2147

White and very dark gray limestone. The white limestone is mostly crystalline and contains crinoid fragments and other organic bodies. The dark gray limestone is like that from 2130-2147. In closed tube faint ammonia fumes and sufficient bitumen to sustain a slight flame were given off. 2147

Bluish gray calcareous shale, with some impure gray limestone. In thin section one fragment shows a finely and evenly crystalline texture. Another fragment contains sponge spicules in an uneven texture of granular and finely crystalline material. In washed material Productus spines and a gastropod resembling Worthenia were seen. A single grain of pale green glauconite and considerable pyrite was seen. In closed tube ammonia fumes were noted. 2200-2203

White limestone and dark calcareous shale. In thin section the limestone shows both granular and finely crystalline texture. The crystalline fragments have irregular oval and rounded areas of granular material surrounded by a clear matrix. This gives the material a depolied appearance. Much of the rock contains a profusion of organic fragments of small size which are mostly altered beyond recognition. In washed material a few fragments of echinoid spines and some pyrite were seen. In closed tube ammonia fumes were given off. 2203-2229

Typical dark gray to black sponge spicule rock. In thin section the rock shows a mass of sponge spicules lying at all angles to the plane of the section. The rock contains considerable silica. In closed tube bituminous fumes enough to sustain a flame and ammonia fumes were given off. 2240-2255

Gray and dark gray organic limestone. In thin section many small fragments of organic material are seen in a finely crystalline and granular matrix. A climacammina (?) and a Valvulina cf. palaeotrochus were seen in thin section. A Productus spine was seen in washed material. In closed tube test faint ammonia fumes and faint fumes of bitumen were given off. 2255-2290

Gray organic limestone. In thin section some coiled and some irregularly bent Ammodiscus tubes are seen. These are curving tubes of small and uniform diameter. Some fragments contain

	Depth in Feet
sponge spicules. A fragment of bryozoan was seen.	2310-2315
Gray organic limestone. Sponge spicules, an Amrodiscus, ostracod valves and other organic fragments were seen in a granular matrix.	2315-2320
Dark gray fine grained limestone. No recognizable organic remains were seen in section except traces of sponge spicules.	2320-2340
Gray and dark gray limestone some of which is partially replaced by silica. Sponge spicules and organic bodies noted.	2340-2434
Dark gray spicular limestone containing occasional grains of glauconite.	2434-2440
Typical black sponge spicule rock of the Bend.	2440-2490
Gray limestone with a small amount of black shale.	2490-2495
White limestone finely ground up and stained by iron oxide.	2495-2500
Like material from 2495-2500 feet.	2500-2510
Like material from 2495-2510 feet. In thin section organic fragments are seen in a granular matrix.	2510-2515
Dark gray limestone and black sponge spicule rock.	2515-2530
Black sponge spicule rock and very dark gray limestone. In thin section considerable pale green glauconite and dark red translucent flakes were noted.	2530-2535
Dark gray and gray limestone containing some grains of glauconite and many organic remains.	2535-2540
Black shale and dark gray limestone which contains many organic remains and sponge spicules. Samples from 1855-2545 feet inclusive are believed to be from the Bend.	2540-2545
Light gray limestone and black siliceous and shaly limestone. In thin section the light gray limestone is seen to be mostly fine grained with occasional small spicules and a small Fusulina. In some fragments small circular areas of fine grained material are seen surrounded by a clearer and coarser crystalline matrix. This gives the rock a dappled appearance. No fossils were seen in the dark siliceous material. In closed tube faint fumes of ammonia and of bitumen were given off. This material is probably from the Bend.	2545-2672
Reddish gray and gray shale containing minute coaly shreds and mica scales, white crystalline limestone, clay-iron-stone, angular sand grains, and a few grains of pyrite. Two ostracod shells, a tubular fragment about 1/4 mm. long with transverse elevated ridges, and a fragment of crinoid stem were seen in washed material. Very strong ammonia fumes were obtained in closed tube.	2558

Depth in Feet

Hard maroon colored shale, hard greenish gray shale, some gray limestone, and a few fragments of black shale. The gray and black shales are calcareous, and the red shale contains a few round sand grains. The black shale is like that found at 2677-2690 feet. A few grains of pyrite are present. A number of Fusulina and several Palochinid spines were noted. The black shale is probably the Lower Bend (Barnett) shale. 2672-2677

Hard greenish gray shale, hard maroon colored shale, a few fragments of black shale, light colored chert, gray limestone, and several grains of pyrite. The black shale contains minute sponge spicules, small fragments of shells, and minute pyrite crystals. The pieces of chert appear to come from a conglomerate. 2677-2690

White limestone and a few grains of gray shale and light grey limestone. The white limestone is mostly fine grained but is partly crystalline and is stained by iron oxide. No fossils were seen. Very faint fumes of ammonia were obtained in closed tube. 2744

Very light gray limestone. In thin section the limestone is seen to be fine-grained. One fragment has a mottled texture and an irregular area of more coarsely crystalline material. Ellenburger. 2700-2810

Very light gray limestone. In thin section the rock is seen to be very fine grained and has a mottled texture. There are, however, a few irregular areas of rather coarsely crystalline material. 2810-2815

Very light gray and pinkish dolomite and limestone. In thin section the dolomite is seen to be moderately coarsely crystalline. 2815-2850

Very light gray dolomite and limestone. A thin section shows the dolomite to be moderately finely crystalline. One section of limestone shows oolitic texture, the ground mass being fine grained and slightly mottled. The largest oolites are one-half mm. in diameter, have a granular center and clear outer rim and radiating structure. Another fine grained fragment of limestone contains a number of rhombohedral crystals, probably of dolomite. Some of these crystals lie in an area of rather coarsely crystalline matrix. 2850-2900

Very light gray dolomite and white and pink limestone. In thin section the dolomite is seen to be of very uneven texture. 2900-2910

Very light gray limestone and dolomite. In thin section the dolomite is seen to be very coarsely crystalline. 3075

Very light gray dolomite. A thin section shows the rock to be coarsely and medium crystalline. Driller's note: "Got salt water." 3100-3115

White chert and very light gray dolomite. 3115-3140

Depth in Feet

Light gray dolomite and limestone. A thin section shows the dolomite to be finely and medium crystalline. 3140-3165

The two samples from the depth of 2672 to 2690 possibly indicate a conglomeritic layer between the basal Bend and the Ellenberger.

Light grey dolomite of moderately coarse crystalline texture, with some crystalline calcite. Evidently Ellenberger limestone. The rock resembles the lower part of this formation. 3310

Paterson 1, Delvatex Petroleum Corporation

Located on Survey 750, Kimble County school lands about 23 miles southwest of Junction, 6 miles from the south and ½ mile from the west county line. Elevation reported at 2140 feet. Standard rig. Water at 135', 1 bailer per hour; at 260', hole full; at 2230', hole full; at 2690, hole full.

Casing record: 15½" to 326'; 12¾" to 1146'; 8¼" to 2230'; 6 5/8" to 2696'.

Drillers log.

	Depth in Feet From	To	Thickness
Lime	0	280	280
Black slate	280	450	170
Lime	450	480	30
Blue slate	480	500	20
Lime	500	525	25
Red rock	525	610	85
White fine clay	610	640	30
Dark slate	640	670	30
Lime shell	670	675	5
Black shale	675	730	55
Light shale	730	1240	510
Sharp sandy lime	1240	1246	6
Light shale	1246	2035	789
White lime	2035	2100	65
Gray sand	2100	2120	20
Blue shale	2120	2125	5
Brown lime	2125	2140	15
Black slate	2140	2145	5
White lime	2145	2165	20
White sand, water	2165	2230	65
Blue shale	2230	2290	60
White lime	2290	2295	5
White shale	2295	2420	125
White lime	2420	2460	40
White shale	2460	2580	120
White lime	2580	2690	110
Dark water sand	2690	2696	6
Dark shale	2696	2703	7
Dark lime	2703	2710	7
Blue shale	2710	2750	40

	Depth in Feet From	To	Thickness
Hard dark sand	2750	2760	10
Blue shale	2760	3150	390
Black shale	3150	3190	40
Brown lime	3190	3240	50
Blue shale	3240	3310	70
Dark lime	3310	3330	20
Blue shale	3330	3360	30
Dark shale	3360	3502	142
Black shale	3502	3605	103
Black lime	3605	3620	15
Broken lime and shale	3620	3760	140
Gray lime	3760	3770	10
Black lime (oil show)	3770	3782	12
White lime	3782	3800	18
Dark lime	3800	3820	20

Description of samples by E. B. Stiles; submitted by Ed M. Eich, 1921.

Gray, very slightly calcareous shale which breaks into long thin splinters. In thin section a crescent-shaped organic fragment with a slightly concave strip extending from one edge almost across to the other was noted. A Productus (?) spine was seen in washed material. When heated in closed tube strong ammonia fumes and bituminous fumes were liberated. 3560-3605

Gray slightly calcareous shale, and some light gray limestone. A smooth ostracod, a minute fragment of a concentrically ribbed pelecypod shell and a claw (?) of a crustacean (?), pointed, curved and three-fourths mm. long, were seen in shale fragments, and several fragments of crinoid joints were noted in the limestone. In thin section minute sub-angular sand grains were noted in the shale. One limestone fragment has a mottled texture, small fine-grained areas being surrounded by crystalline areas. Part of another limestone fragment has a mottled texture and the remaining area is finely crystalline. In the mottled area is one rectangular and one rounded fine-grained area and one triangular crystalline area. Strong ammonia fumes and bituminous fumes were obtained when sample was heated in closed tube. 3605-3610

Gray, slightly calcareous shale and a few fragments of light gray limestone. The shale breaks into long thin splinters and in thin section is seen to contain very fine sand. Some fragments of crinoid joints were seen in a limestone fragment. A Productus spine was noted in washed material. Bituminous fumes and ammonia fumes were obtained when sample was heated in closed tube. 3610-3615

Gray shale such as found at 3610-3615 feet. 3615-3640

Gray shale such as found at 3610-3615 feet. Several Ammodisci were noted. 3640

Gray calcareous indurated shale and a few fragments of gray limestone. A few sand grains and pyrite crystals are present.

Depth in Feet

In thin section the shale is seen to be impregnated with bituminous material and to contain fine angular sand grains. In washed material were noted a few fragments of crinoid joints and an elongated Ammodiscus (?) less than one-third mm. long. When heated in closed tube, bituminous fumes and ammonic fumes were liberated. 3640-3703

Dark bluish gray, hard, slightly calcareous shale and light gray limestone. The shale breaks into rectangular fragments and on a polished surface one fragment shows pyrite crystals and several sponge spicules and a few other organic fragments. A polished surface of the limestone shows several cavities lined with crystals and small fractures. At several places the fractures are lined and filled with calcite crystals. In thin section the shale is seen to be bituminous and to contain fine angular sand grains. A thin section of the limestone shows one fragment to be partly fine grained and partly crystalline in texture, another fragment being fine grained with three large crystalline areas. The latter fragment contains minute needle-like crystalline bodies about one-twentieth mm. long. The other fragment contains numerous organic fragments, among which several ostracods and a bryozoan were noted. In washed material several calcareous sponge spicules and several ammodisci were noted. The latter are mostly elongated, the largest one being from one-third to one-half mm. long and one-sixth mm. wide. A smooth ostracod was also noted. When sample was heated in closed tube strong ammonia fumes were liberated. 3760

Rock such as found at 3760 feet, but limestone predominates. In thin section one limestone fragment is seen to be wholly crystalline, the crystals averaging one-third mm. in diameter. The other fragments are partly finely granular and partly crystalline in texture, the granular portions being mottled. Several fragments of crinoid tissue, a Chinocarmina ?, and a few other organic fragments were noted. In washed material some fragments of crinoid joints and several calcareous sponge spicules were noted. When heated in closed tube, strong ammonia fumes were liberated. 3760-3765

Dark gray shale, mostly spicular, and light gray limestone. In thin section the shale is seen to contain a feltwork of large sponge spicules embedded in a partly bituminous matrix. A few pale green grains of glauconite are present among the spicules. Two shale fragments are like these but lack the spicules. A limestone fragment shows a finely mottled texture in which are embedded a few small indistinct organic fragments. Ammonia fumes were liberated when sample was heated in closed tube. 3765-3770

Dark gray hard slightly calcareous shale, partly with and partly without sponge spicules. In thin section two shale fragments show an abundance of practically only transverse sections of spicules, indicating that the latter lie oriented in the same direction. A fragment of a plant stem was noted in one fragment of rock. Very strong bituminous fumes that caused a slight deposit of oil were obtained when sample was heated in closed tube. Ammonia fumes were also noted. 3770-3780

Depth in Feet

Dark gray bituminous and very slightly calcareous shale, some fragments containing numerous sponge spicules; cream-colored limestone, partly cherty. On a polished surface of the shale were noted numerous minute scattered crystals of pyrite. Some clusters of crystals and several concretions of pyrite with a white clay center were also noted. The shale breaks easily into rectangular pieces and splinters. In thin section it is seen to contain some fine sand, while the limestone shows a fine-grained mottled texture with some irregular crystalline areas. In washed material several fragments of crinoid joints were noted. Strong bituminous fumes and ammonia fumes were liberated when sample was heated in closed tube. 3780

Cream-colored cherty limestone, mostly fine-grained. The chert is pure white. Bituminous fumes and very faint ammonia fumes were liberated when sample was heated in closed tube. 3798

Gray, very fine-grained limestone and some light gray limestone, partly cherty, and dark gray shale. In thin section the limestone and shale are seen to be similar to that just above. Very faint ammonia fumes and very faint bituminous fumes were noted when sample was heated in closed tube. 3800

Gray and very light gray cherty limestone and dark gray shale. In thin section a fragment of the gray limestone is seen to be mostly distinctly crystalline in texture with a fine grained mottled area. The light gray limestone is mottled in texture with many small crystalline areas and several undetermined organic fragments. When heated in closed tube, very faint ammonia fumes were liberated. 3803

Gray limestone and some light gray limestone and dark gray shale. In thin section the gray limestone is seen to have a mottled texture, small fine-grained areas alternating with finely crystalline areas. Several very fine veins and a few undeterminable organic remains were noted in section. In washed material several ammodisci and a few fragments of crinoid joints were noted. When heated in closed tube, faint bituminous fumes and very faint ammonia fumes were noted. 3805

Like sample from 3805 feet. 3807

Like sample from 3805 feet. 3815

Dark gray limestone and cherty limestone with some black shale. Productus spine and crinoid stem fragments were seen in washed material. One fragment when dissolved in HCl left several siliceous sponge spicules. In thin section fragments of organic remains are seen in a granular textured limestone. Other fragments with a more coarsely granular to crystalline texture show no organic remains in section. In closed tube bituminous and ammonia fumes were given off. 3814-3819

Dark gray and black shaly limestone. In thin section organic fragments are seen in a coarse granular matrix. Several small ammodisci, a form resembling Textularia and cross

Depth in Feet

section of small bivalve shell were seen. In washed material an occasional fragment of sponge spicules was noted. Some chert and black calcareous shale present. In closed tube very faint fumes of bitumen and ammonia were noted. 3819-3825

Gray somewhat brownish limestone. In thin section outlines of organic remains are seen in a granular and crystalline matrix. A Trochamina and several ammodisci of small size were identified. One large fragment showing osseous texture showing a central area filled with rock material was noted. In closed tube faint sulphur fumes and very faint fumes of bitumen and ammonia were noted. 3820

Gray limestone containing chert. In thin section many organic remains are seen in a granular matrix. Several Endothyra, sponge spicules, Productus spines, ostracod valves and other undetermined fragments were seen. Some dark shale of a coarse texture present, probably from higher up. In closed tube very faint fumes of ammonia and bitumen were given off. 3833

Dark gray somewhat cherty limestone. In thin section organic tests such as Fusulina (?), Textularia of large size, Ammodiscus, Endothyra, and other undetermined organisms are seen in a granular matrix. In washed material, crinoid joints and Productus spines were seen. A grain of green glauconite was also seen in a fragment of limestone. In closed tube bituminous fumes sufficient to make a deposit in tube, and faint ammonia fumes were given off. Aspect of the Marble Falls limestone. 3838-3853

Dark gray limestone containing organic fragments in a granular matrix. Fusulina (?), bryozoan and other undetermined fragments. Areas of crystalline material appear to have replaced some of the fragments. Some chert present. In closed tube strong bituminous fumes with a slight deposit of oil, and faint ammonia fumes were given off. 3845

Gray somewhat cherty limestone like that in sample from 3838-3853 feet. Fusulina, two Trochamina, Ammodiscus, a perfect specimen of a large Textularia, ostracod valves and Productus spines were noted. Strong bituminous fumes with a slight deposit of oil were given off in closed tube test. 3850

Light gray limestone and dark gray shale. On a polished surface of the shale were noted minute crystals of pyrite. In thin section the shale is seen to contain minute sand grains, and the limestone has a fine-grained, slightly mottled texture and contains a Valvulina bulloides (?) and obscure traces of sponge spicules in the limestone, and a few other organic fragments. A few fragments of crinoid joints were noted in washed material. Strong bituminous fumes were liberated when sample was heated in closed tube. 3852

Light gray limestone, partly cherty, and some dark gray shale. In thin section of the limestone were noted crinoid tissue, a Fusulina, Endothyrae, a Valvulina, and many organic fragments. In washed material, were noted some sponge spicules and fragments of crinoid joints, and several fragments of brachiopod (?) shells. Closed tube test yielded strong bituminous fumes and faint ammonia fumes. 3856

Depth in Feet

Gray and light gray cherty fossiliferous limestone and a small amount of dark gray bituminous shale. In thin section the limestone is seen to have a clear crystalline matrix. Some crinoid tissue, Fusulina, and an Ammodiscus (?) were seen in section. One chert fragment shows a small quartz vein. Strong bituminous fumes and faint ammonia fumes were noted when sample was heated in closed tube. 3860

Gray and light gray cherty fossiliferous limestone and some gray, dark, bituminous shale. A thin section shows the limestone to have a most coarsely texture in which are embedded an Endothyra, a Fusulina and a number of organic fragments. Several fragments of crinoid joints and a Productus spine were noted in washed material. Strong bituminous fumes and a slight deposit of oil were obtained when sample was heated in closed tube. 3867

Light gray cherty limestone, and some dark gray bituminous shale containing pyrite. In thin section the limestone is seen to have a partly granular and partly crystalline texture in which are embedded numerous organic fragments. Among these latter Fusulina, and a conical Valvulina were identified. In washed material were noted some sponge spicules, an Endothyra, and a Palechinid spine, Strong bituminous fumes were obtained in closed tube test. 3870

Sample consists of dark maroon colored noncalcareous clay and some white noncalcareous clay, fine-grained pinkish cherty rock, and some gray limestone, gray shale, white and yellow chert and a few grains of rounded, etched sand and crystals of pyrite. In thin section the cherty rock is seen to be filled with minute dark specks grouped in very irregular manner. It also shows traces of organic fragments, and rarely sponge spicules, and other more clearly outlined but undeterminable organic bodies. When heated in closed tube, ammonia and sulphur fumes were liberated. Aspect of hiatus material between Bend and Bloomburger. 3894

White and pink cherty rock, gray shale, a few fragments yellowish chert and some gray limestone, and a few grains of rounded etched sand. 3899

Very dark gray fine-grained shale, white and pink cherty rock, and gray siliceous spicular rock, gray limestone and chert. A few grains of small rounded and etched sand grains and of pyrite are present. In thin section the shale is seen to contain bituminous material and some fine angular sand. Several ammodisci and two fragments of crinoid joints were noted in washed material. When heated in closed tube strong ammonia fumes were liberated. 3902

White and pinkish cherty rock, gray, minutely sandy shale, yellowish chert showing traces of sponge spicules, small rounded and etched sand grains, and gray limestone. In thin section an ostracod (?) valve was noted in the shale. Some of the white cherty rock when viewed in thin section is seen to be filled with sponge spicules. When heated in closed tube, strong sulphur fumes and ammonia fumes were liberated. 3905

Like sample from 3905 feet. 3906

Depth in Feet

Very light pinkish chert, dark maroon colored noncalcareous very hard shale, and some black noncalcareous very hard shale. The maroon shale contains specks and streaks of light gray shale. A thin section shows the chert to contain considerable fine granular material and sponge spicules. When heated in colsed tube, faint bituminous fumes were liberated. 3908

Like sample from 3908 feet, but black shale is practically absent. Several of the chert fragments were seen to contain many sponge spicules. 3913

Very light pinkish chert and a few fragments of maroon and black shale. In thin section some of the chert fragments are seen to contain considerable granular material. Two chert fragments show finely granular texture in which are embedded clear quartz bodies, about one-fifteenth mm. in size. 3918

Very light pinkish chert and a few fragments of maroon and very dark gray shale. In thin section of the chert sponge spicules were noted, most of them in cross section. 3923

Very light pinkish chert; sponge spicules were noted in a few fragments. A few fragments of maroon and very dark shale present. 3926

Very light pinkish chert and a small amount of maroon and very dark gray hard shale. In thin section the chert is seen to contain some clear quartz bodies, the largest ones measuring about one-half mm. in size. 3932

Very light pinkish chert and a few fragments of maroon colored and very dark gray hard shale. A few sponge spicules were noted in several of the chert fragments. Some clear quartz bodies were noted in the chert. 3938

Very light pinkish chert and a small amount of maroon-colored and very dark gray hard shale. In thin section chert fragments show numerous sponge spicules, large and small. A number of clear quartz bodies of various sizes were noted in the chert fragments. 3941

Very light pinkish chert and a few fragments of maroon-colored and black hard shale. The red shale contains areas of very light gray shale, and several fragments show a profusion of slickensides. In thin section several fragments of chert show sponge spicules and rounded quartz bodies. Some of the spicules have the central cavity filled with brown bituminous material. 3946

White to very light pinkish chert which in thin section is seen to contain sponge spicules and some clear quartz. Brown bituminous material fills the cavities in most of the spicules. 3953

Light gray chert, very light pinkish chert, hard maroon-colored shale, and some hard light green shale. The gray chert is very fine grained and homogeneous in texture. It contains cavities which in some cases are lined with quartz crystals. Some veins of quartz and pyrite and minute scattered crystals of pyrite were also noted in the chert. In thin section one gray fragment is seen to be composed of very finely granular bodies embedded in a clear matrix. These bodies are

Depth in Feet

irregular in shape, being mostly oblong, and vary in size. The largest ones are from one-half to three-fourths mm. long. 3961

Light gray very fine chert, light gray dolomite, light pink granular chert, and some maroon and very dark gray hard shale. Some pyrite present. In thin section the dolomite is seen to be fairly coarsely crystalline. Fine needle-like bodies, some fine veins and an area of dappled texture were noted in one chert fragment. 3965

Very light gray and white chert, black noncalcareous shale and some light gray dolomite. The white chert is porous and some fragments show dappled texture. Bodies of finely granular material are embedded in a clear matrix. One of the granular bodies shows a network of fine veins. 3968

Light gray dolomite and some white chert and a few fragments of dark brown and pinkish hard shale. The brown shale contains rounded quartz sand. In thin section the dolomite is seen to be fairly coarsely crystalline, and to contain considerable granular material. 3975

White chert light gray dolomite, and some greenish, maroon, and black hard shale. An abundance of minute crystals of pyrite are present in the greenish shale. Some pyrite was also noted in the chert and dolomite. 3972

Light gray dolomite, hard dark gray shale and maroon colored shale, and some white to very light gray chert. Some of the dark gray shale has broken into slender rectangular splinters. In thin section the dolomite is seen to be coarsely crystalline. 3977

Very light gray chert and very light gray dolomite. In water mounts the majority of the chert fragments are seen to have a dappled texture, bodies of finely granular brown material being embedded in a clear ground mass. The dolomite is rather finely crystalline. In thin section the granular bodies in two of the chert fragments measure about one-eighth mm. in size. Another fragment consists of typical oolite of larger sized oolitic spherules. Ellenburger. 3980

Note: The chert found in samples from 3908 to 3961 feet is porous, of a light pinkish color, and contains clear quartz bodies. From 3961 to 3980 feet the chert is light gray, has a dappled texture and contains quartz veins. It is to be noted that dolomite fragments are found from 3965 feet down. Only the lowest sample (from 3980 feet) represents typical Ellenburger rock. Samples above 3980 feet represent material between the lower Bend shales and the Ellenburger. Rock from 3961 to 3977 feet probably is a conglomerate containing pebbles of Ellenburger dolomite and chert.

Russell I. Thomas and Ludlow

Located on Survey 42, B. S. and F. lands.

Drillers log. (incomplete).

	Depth in Feet From	To	Thickness
Lime - water	0	150	150
Sand	150	155	5
Lime	155	300	145
White shale	300	330	30
Sand - water	330	360	30
Red shale	360	380	20
Lime	380	390	10
Brown shale	390	395	5
Red rock	395	420	25
Hard lime	420	450	30
Blue shale	450	455	5
Hard lime	455	475	20
Sand - little water	475	485	10
Hard lime	485	495	10
Broken lime	495	505	10
Hard lime	505	560	55
Blue shale	560	565	5
Hard lime and sand - showing oil, little water	565	570	5
Hard lime	570	590	20
Blue shale	590	612	22
Lime - water, little	612	650	38
Lime	650	675	25
Blue shale	675	690	15
Lime	690	710	20
Blue shale	710	730	20
Lime	730	830	100
Blue shale	830	855	25
Sandstone - water	855	860	5
Blue shale	860	1055	195