July 7, 1961

Stop 1: loc. 1173 Berryhill, Wash. (W of Wash. Co. line) 0.43 mi SW of Sewage disposal plant secondary rd. S of Hwy 168 or Horseshoe Rd.

7/7/1 Little Captina Los. member, S 2 1/2 rd.

7/7/2 Ellis, col. Uniontown Los.

Stop 2: Ellis 7/7/3 ca. 162 on E side Hwy 168 S of Jordan's Run N Central Wash. Wet. O. Kenne

Stop 3: W side Co. Rd. 30024, at 0.55 mi. NW 2 field with Co. Rd. 30011 S of Schubsals Church on corner Quarry.

7/7/4/61 Top of uppermost 1s in 4, Wash. member, also plant from.

7/7/4/61 Top of lower 1s at quarry level below 7/7/4

Stop 4: County Route 30063. 2 1/2 (2.5) mi NE of Nineveh near high plat white road crosses Ridge below x rd. E. 1307' W. el. (1317 ft x rd.)

7/7/6 Nineveh?? type about same el. as churned from tractor.
Section F by King's oil & gas.
map 36
pictures of dead animals on fence
and there were 2 Penn. 48 by 60
5-20-1, 2 & Helma 5-20-3
The dev. 5-20-4 was 1 1/2 up
slope and stop 7 half is 1/2 t.

Lea Moodwell - Lazy 2 Ranch
7 of Mr. Henry

5-20-1 Penn. L. Massive bed
little badge 14 1/2 below
big beds (5,000) were more silica than 5-20-2

Massive L. 14 1/2 above 5-20-1

Helms shale 12 1/2 below
Massive Penn. / 5-20-1

Dev. 1 1/2 way up hill polar on surface

Type Hueco
Basal Massive unit N. side
US Hwy 47, Hueco Inn
Palo Duro Canyon

Root 06
Junction 2 98.1
Red at Bone Spring - dark (absent
boiling 18. smells when hit
Tum 8 ft m South 1d.

Getaway 15. loaded with
residue some bricks - foreto
tap the fire. Same middle
Getaway 15. about 6' below
5.21-1. 2 collections are
the above from Guadalupe Summit
Beech. Not area just before
rd climb to beacon,
Collectson Co. 1st PC of El Capitan
from here also one from area
Beech. 1st exp. 150'. 1.6
2nd 0.0 4.5 8.6

North to Hunay
First service station 3rd cart.
0.8' E 1040'.5' N 31'55' Kings M. 5.2. Westing
Monsantia Mountain Cherry Canyon

2' above 5.21-3 CS. below
between Ash 4c. 5.21-4
Ash 6' above 5.21-4

USNM Loc 39745, see E9R SR-61-3
0.4 mile N on Hwy. Hoped for. Then flat 15. with
shale bedding. Picture 2 stories in brown white and gray

N 30° Outcrop
1 Lamia R. rear. Topy SC.

Clay between plat. of lfs (unlaided) Picture 2 cut
with exception to background. Call on 15. side 9 cut.

Turn around & go towards E 11 900.
323 9 First rd. to right (SW Rd.).
Make rt. 1Krd. 1 mile
N of hill base SE 74 landing stop.
Top of Hill 2K in 45 22 1 = 925

Same as 5-21-7 but nearer
to the reef.
Silk 23 1 2 becomes some particular

Picture Accts. Picture on outcrop.
McCormick Trm. rd. back from
10th fork above Creek. Beac. Way
30 4 at main Hwy. reads 320.
65. western 12 brown sil. fossils
has Polystichus - 19. fireline.
16 miles on Bratton Rd. from Hwy. 05 62

Kingon Wop. - Hwy moved.
N Hwy 05 3 1/4 Field Camp. 05 7 1/2
Leave Alamogordo for Las Cruces.
Ship 206 etc. 7 rocks.
Roll & White Sands, then Organ mt.

5-24-1

2nd roll

flowers & hotel
Los Cruces, N.M.

Hueco, on top of spur, silicified. 2s.
USNM loc 39751
LS. 6' below 5-26-1
These 2 are above Abó tongue

USNM loc 39752
Soft 1s. & ? sh. below 6s. ledge
and between 6s. beds just
below Abó Tongue. This
sample may be contaminated
Shale on slope below 5-26-3
Shale, 75' below Abó tongue

pel. 25' above or in 25-6-1
Robelado Mts. S.W. sec. 19 T.22S. R.1E.
Dans Ave. City, N. M.

5-26-6
LS. across section about 60'
horiz. & 10' strat. Pennsylvian.
Helme shale in prospect pit.
Two chunks of opalizing to 2
etcb. about 25' below Topa-
Helme is alone, shale 5-26-7 abated
pieces for etching 2 legs

5-26-7

5-26-8

May 26, 1960
7-13-5

Deer Creek Section

Indian Hills

Ralston Creek fm. ± 8
bellow basal morrison ss.
just above the marl 2' 9
2' ± marlstone or ls with
chest. Varnegeld claystone

7-13-6

Morrison above basal ss.
15' ² from Top ± 3' ± below
2nd cliff marker X bedded
ss. maroon silty claystone
± bed 7 7 7/13/3

7/13/7

Morrison just below
Dakota ss. 2' channel
thin bedded siltstone
± claystone
US Bureau Mines
Oil Sh. Plant

3rd Saddle Elev. 7070' go down rd about 700' shape with lenses & fractures about 15' below massive sand about 500' above water lower part of another.

Anvil Point  pm. +
Douglas Cr. (Top?)
0.8 mile above E1 6575' sigh up road.

7-14-7
sh. with others 0.2 mile down road from 7-14-7 100'-150' above top of W CSS
Tilford Rd. lot 8 nr. pleasant valley

8/10/10 - 5' below contact. Fall Rirk clayey silt loam in top 3 lakota. I tested in
basal

8/10/11 - Basal 2' 7 Fall Rirk. Above 8/10/10 sample

8/10/12 - No 8/10/12 - 8/10/14
8/14/12  Sh. with Devonian tone  below 48.7 8/14/11  32.2

from 32.2' - 45.0' below ss

8/14/13  L.S. Sandy  1/2

8/14/14  Sh. 13.1  for 46.5 - 47.8 below ss  ss & sh black sand knoty weather  Not sampled.

8/14/15  Shale! bas in 39.2' below ss  (Note error above)  Thickness 10.8'

8/14/16  Sandy 5.1' below 1'  ss lies on 1.2'

8/14/17  Pic. Bell roll 9  Gr gray & sh the sh below ss  0.9'

8/14/18  Shale getting sandy towards 30'  49.2' below contact (base)  Thickness 5.4' - 3' 4.6' thicker
Shoshone River, E. of Lord's Ranch.
Morrison above Sundance and below Larkota.

Time zone.
Highest in sec. 38 1/2 above Sundance.
Sample 8/15/17 and 8/15/18 above Redrock Channel sample.
Mudstone below 8/15/17.
Tint zone below.

8/15/17
USGS 26886

8/15/17
USGS 26887

8/15/17
USGS 26886

From Tinty zone at base
7 8/15/17
Top of 1000.

Tinty zone 6' 2" 17

8/15/17
USGS 26886

Above Sundance.

Black & White,
pit 2 & 3 running from
1/3 across river bed.
pit 5 Sundance bed 2.
Above 7. Tree closer.

Than 2 3/4.
Upper Chuska Canyon  
Martins Ranch  
Lower part of Laketa +  
Buck Comanche section  
N.W. 1/4 7 21/2  

8/15/7  
Mudstone - no outcrops  
100' above lowest sample (question)  

8/15/10  
30990  
Mudstone - opt. seen  
20' below 8/15/9  

8/15/10  
31189  
5' below 8/15/10  
has 2 samples with  
paper st.  

8/15/12  
3130  
8/15/13  
31237  
Sandy, just above 8/15/10 dated  
about 3' below 8/15/11  

8/15/14  
31238  
Bottom sample
NAME: D.E. Wolcott

DATE: Aug. 16. 1967

Pecks Ioc. D. 286 (p. 11)
NE 45 32 T. 7 S, R. 6 E. on sec. 32-29,

5/1/61 upper 1/2 of lease
USGS Meso 31151

8/1/62 lower 1/2 3 of lease to Wolkoff
USGS Meso 31154

8/1/63 S. break at above lowest

Evans Quarry, sec. 33, T. 7 S, R. 6 E.
Type: Fall Riv. I. Lower portion
Mudstone below the Evans
query sand, Fall Riv. (1/2
Evans sand chips along
entire face.

9/16/6 Red gray mudstone above
Evans sand and calcareous peat
8'-12' - red mudstone in
"cathal" same area? sample

8/1/67 Unit "N" 10 Wolkoff SE 1/4 5/16
River bed above power house
(Cupstream).

8/16/6 Unit "O" lower 6" from above
hematite seam
Copper Creek section, near Newcastle W 1/2 SE 1/4 sec 20
7451 N R.61W. Maple sec. 6
8/19/1 Fall Riv. unit 13 just above con.

8/19/2 Lake 5 below carbonate about 100' below base.
8 Fall Riv.

8/19/3 Maple unit 16 - Fall Riv.
Maple 1oc. 68 b 20.23
8/19/4 Morrison 67'2 above Sundance some pebbly lime included with underlying green and brown muskeg

8/19/5 About 15' below 8/19/4
USGS M350 26898

8/19/6 About 15' below 8/19/5
USGS M350 26899

8/19/7 About 5' above base. Ostracoda.
USGS M350 26900
8/19/20  Maple loc. 109, Upland Sundance Hwy, Fall River, near base Maple base 7, unit 2
8/19/20  Maple loc. 41 (said in Lakota)
8/19/20  Morrison, 15' above Sundance
8/19/20  Morrison, 24' above base
8/19/20  USGS Miss. 26909
8/19/20  Morrison, 40' above base
8/19/20  USGS Miss. 26911
8/19/20  Lakota unit 17, 12' above base, Lakota 1. Osceola, present, do not boil
8/19/20  Lakota unit 17, 12' above base, Lakeza 1. Osceola, present, do not boil
Maple Loc. 10

8/20/1
Top, 2' 7" Morrison unit 10

8/20/2
Upper part unit 9, 4' 3" below
Top of Morrison

8/20/3
Labota, Maple unit 15
Middle part unit 80' 3" above
Base 7' 1" Labota

8/20/4
Morrison, 22' below calculation
Maple unit 5 (Top 7 unit)
22' above base 7 Morrison
Correct label in Box 8' 5"
Morrison base 8 unit 9
17' above base 7 Morrison

8/20/5
Morrison, Maple unit 3,
9' above base 7 Morrison
There would be Bank 84

Nicholson bench, Loc. 80
8/20/7
Morrison 9' above windshield
Unit 3
15' below top 9 Morrison, unit 4

8/20/8
7', below top, unit 4

8/20/9
7', below top, unit 5

8/20/10
7', below top, unit 5, you call it marsh
La Rota, unit 7, 3' above base
October 10, 1957

Mr. L. G. Solm
Paleontology and Stratigraphy Branch
U. S. Geological Survey
Escanaba Hall
Washington 25, D. C.

Dear Greg,

Under separate cover I am sending you a sample of the red shale from the Minnelusa formation (Fenn.) in the Fanny Peak area, Wyoming. This sample is from Sec. 16, T. 45 N., R. 60 W., Weston Co., Wyo. More specifically—from the lower 5 feet of this red shale, about 150 feet above the Minnelusa—Pahasapa contact. I hope its good and "buggy"!

Your good ostracods from the Morrison formation at Whoopup Canyon (sec. 29, T. 44 N., R. 60 W., Weston Co., Wyo.) in the Fanny Peak quadrangle came from 22 feet above the base of the unit. I subsequently returned to measure that section.

I hope we can hunt ostracods together soon again.

Sincerely,

D. A. Brobst

cc: Kathy Karlson
U. S. Geological Survey
Room 338 U. S. National Museum
Washington 25, D. C.
12. Claystone, sandy, scattered chert and quartz grains. Upper 3' variegated red and green, chiefly red below with some bright green and yellow mottling in lower 5'.


10. Sandstone, fine to medium grained, locally conglomeratic, some interstitial claystone. Upper 2' chiefly sandy greenish-gray claystone; below this it is gray unconsolidated sand with scattered granules and small pebbles chert and quartz; weathers yellow gray. Basal .3' is hard, limey, conglomeric bed which crops locally as ledge.

9. Sandstone, fine to coarse grained and conglomeric clayey, with some sandy claystone in upper 2'. Below this progressively coarser downward with scattered chert quartz granules. Basal .4' to .8' hard, limey, coarse, conglomeratic sandstone.
Robinson's Skull Creek section at New Haven triangular point.

Skull Creek 130' below Newcastle, Maine 05553

Skull Creek at above lower sandy zone in upper part B section.

Skull Creek or Newcastle, transition zone above phosphatic grade 5 sand unit and 7' below Newcastle sandstone

Middle unit of Skull Creek Section from above 26' above silty zone at base of Skull Creek offset lowest non-silty hornfelsic shale, at base 7' silty unit of Skull Creek 4.5' above. Fall River-Quabbin transition.

Silty zone above 8/23/3 31' above Transition zone.

NHM 27 Lake Otis, 3611-3613'

Fall River clay above ore, Pit No. 5 Home Stake Mining Co., Hulet or area. To USNM Minerals
<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Collector</th>
<th>Mapel</th>
<th>Locality</th>
<th>Memoranda</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/20/23</td>
<td>7/20/57</td>
<td></td>
<td>86 - 8</td>
<td>Belle Faarcho R.</td>
<td>18' above base Morrison</td>
</tr>
</tbody>
</table>

In charge.

United States Department of the Interior—GEOLOGICAL SURVEY

Collector: Date: 7/20/57
Notebook:
Page: 3
<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Collector</th>
<th>Notebook</th>
<th>Memoranda</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/20/25</td>
<td>8/20/57</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Survey of the**

In charge.

**No. 8/20/25**

<table>
<thead>
<tr>
<th>Name</th>
<th>Field:</th>
<th>Determined:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MORRISON</td>
</tr>
</tbody>
</table>

**Locality:**

Belle Fourche R.

Manel 86 - 9

75' above base MORRISON
NAME  [Blank]  DATE 8/24/57 P.3

U. S. GOVERNMENT PRINTING OFFICE 16–37601–1

3/24/12  241 above base of Tullock Member 7 Ft. Union Farm Road and w of sec. 16 T56N R69W Cambell Co. Rockpunts to Western Rd

3/24/13  35’ below contact with Ft. Union Lance for same loc as above

8/24/14  50 1/2 N82º E240  T56N R69W Cambell same as cobble D442

55’ below Foxhills about 10‘ above base

8/24/15  Pierre shale 50’ below 8/24/14
35'-45' below top of bentonitic member (Kans. O. Robinson et al.)
sandstone between two thin bentonite beds

30' above base of Monument Hill bentonitic member of Pierre Shale.

70' strat. above top of Miller black shale member.
Middle unit of Pierre shale.

2'-3' below Monument Hill bentonitic member: upper part of middle unit of Pierre sh.
11. Sandstone, medium- to coarse-grained, thinly interbedded with hard, conglomeratic, lignitic, sandy shale. Conglomerate of granules and small pebbles of chert, claystone and carbonized wood; some larger wood fragments. Color variable, gray, brown and black. 2.6' 

10. Sandstone, medium to coarse-grained, massive, cross-laminated, friable, light gray. Locally has scattered chert granules in lower 2.0 feet. 11.2' 

9. Claystone, sandy and conglomeratic, lignitic black to brown. Granules and small pebbles of chert, sandstone, claystone and carbonized wood. 0.7' 

8. Claystone, slightly sandy, gray to brownish gray with carbonaceous specks. 4.6' 

7. Sandstone, medium-grained, friable; some interbedded sandy claystone. 4.9' 

6. Sandstone, medium- to coarse-grained and conglomerate. Granules and small pebbles of chert scattered throughout upper 9.0 feet. Lower 2.0 feet becoming clayey. Light gray with some yellow and red stain. 11.0'
Section of McCoy formation

Measured in sections 8 and 17 of T. 2 S., R.83 W.

Conformable contact with State Bridge siltstone

Units

94. Sandstone, arkosic grits, and conglomerates, pink to red, strongly cross-bedded, with few interbedded shales and limestones in lower portion

640

Measured on west side of Rock Creek bridge at McCoy

93. Limestone, light gray, dense, no fossils
(Leadvilleoides of Ehlers) 4

92. Conglomerate and sandstone, mostly pink to maroon, arkosic, cross-bedded, with little shale 184

91. Limestone, dark gray, not persistent, barren 1

90. Conglomerate, pink to gray to maroon, arkosic; cross-bedded sandstone and micaceous shale 30

89. Limestone, dark gray, fine-grained, with fossils: Lens shaped and splits into 2 laterally 3

88. Similar to unit 90 241

87. Shale and sandstone, red and green, micaceous. Interbedded nodular limestone containing fossils. Coarse sand-
McCoy West of Rock Creek
& N. of Rd

7-12-1
Q. Syron, geologist
[Handwritten notes and diagrams]
Eastern Sequence

The Lakota outcrop along the eastern side of the Black Hills is poorly exposed. Much of the sequence is of soft beds and these are generally covered. The best exposures are of local massive sandstone lenses scattered throughout the Lakota, and of the upper beds of the Lakota underlying the Fall River contact.

In the Sturgis area the Lakota as a whole appears to consist of five fairly distinct subunits listed below in a highly generalized section.

<table>
<thead>
<tr>
<th>Fall River formation</th>
<th>Approximate thickness in feet.</th>
</tr>
</thead>
<tbody>
<tr>
<td>disconformity</td>
<td></td>
</tr>
<tr>
<td>Lakota formation</td>
<td></td>
</tr>
</tbody>
</table>

5. Claystone and silty claystone, color-banded to variegated, some thin sandstone lenses, and at least one local thick lens of massive sandstone occupying most of the interval. Siderite spherulites common in upper 5 to 12 feet. 40 - 75

4. Siltstone, massive, clayey at top becoming sandy downward and grading into a silty, commonly structureless, friable sandstone, white with purplish stain common. 60 - 80
Red Canyon section

Thickness in feet.

Fall River formation

Contact covered

Lakota formation

16. Covered probably maroon to gray silty claystone. 23.0'

15. Claystone, silty to nonsilty, brownish gray. 17.0'

14. Sandstone, very fine-grained to silty, massive at base to tabular at top, white to pink with orange-red specks. Grades laterally to yellow and light gray siltstone. 12.5'

13. Siltstone, maroon, variegated with gray and yellow. 25.0'

12. Sandstone, fine-grained, massive, white to pink. 23.0'

11. Covered slope. Probably on greenish to maroon siltstone and claystone. 11.0'

10. Sandstone, light gray to white with interbeds of green siltstone. Sandstone in beds up to 2 feet thick, weathers pinkish yellowish brown with variegated stain. 10.5'
Inyan Kara Creek Section #1.

Fall River formation (in part)  

16. Sandstone, light gray, fine grained carbonaceous; 1.0 foot bed of gray shale in middle part separates it into two ledges; ripple-marked at top.  18.0

15. Shale, medium to dark gray, silty; contains few 1 to 2 inch veds of yellowish-brown, fine-grained to silty sandstone.  21.0

Disconformity

Lakota formation

14. Claystone, sandy, variegated, weathers grayish white with pink stain; contains scattered coarse grains of chert and quartz; becomes increasingly sandy downward and grades into unit below.  22.5

13. Sandstone, fine to coarse grained, massive grayish-white, friable. Locally contains granules and pebbles of chert and quartzite, chiefly in base 4 feet.  227.5

12. Claystone, partially obscured, upper 10 to 15 feet red, grading downward to purplish red in middle part; lower 10
21. Sandstone, fine-grained, thin-bedded, cross laminated, to cross-bedded, ripple marked, "worm"-tracked. Some thin beds and partings shaly sandstone and few thin layers gypsum. Some Fe-impregnated beds in upper 3.0 feet. Weathers buff.

20. Shale, silty, dark gray to black, selenitic; inter-bedded with laminae and thin layers fine-grained sandstone which are "worm"-tracked, locally Fe-impregnated. Becomes sandier upward grading to unit 21.

19. Siltstone, clayey in lower 2.5 feet, becoming hard, massive, sandy, white-weathering ledge in upper 2.0 feet.

18. Siltstone, clayey, and silty claystone, dark gray to black, hard, with carbonized plant fragments.

disconformity

Lakota formation

17. Claystone, silty, light gray, weather white.
16. Claystone, silty, variegated, covered by wash and crust of clay. Upper 10.0 chiefly greenish gray with minor red mottling, lower 11.0 is chiefly red in upper part green at base, with some scattered ferruginous specks from weathered siderite spherulites up to 2mm in diameter.

15. Sandstone, fine to coarse grained and conglomeratic. Chert, quartz, and quartzite granules and small pebbles in irregular beds chiefly in lower 4.0 feet. Plant stem molds common. Weathers rusty orange-brown to red.

14. Claystone, silty to sandy, dark brownish-gray, selenitic.

13. Claystone, sandy, gray to brownish gray.

12. Sandstone, clayey, and sandy claystone, scattered coarse grains and granules of chert, polished chert and quartzite pebbles in float. Upper 0.6 to 1.6 feet is white-weathering, hard, flaky claystone, may be porcellanitic.
III. Sandstone, clayey, conglomeratic. Chert and quartz in coarse grains, granules and small pebbles. Scattered polished pebbles and cobbles up to 0.7 foot in diameter.

10. Obscured, probably sandstone or sandy claystone as above.

9. Sandstone, fine-grained, massive, cross-laminated.

8. Obscured by float and slope wash.

7. Sandstone, medium-grained, hard, with vari-colored chert and quartz-pebble conglomerate in basal 2.0 to 3.0 feet. Weathers to gray or brown ledge. Latter also contains some large pebbles and cobbles gray, unpolished chert and subangular claystone fragments up to 0.8 foot in diameter.

Total thickness of Lakota (rounded) 128.0
32. Conglomerate, mixture of large blocks and poorly rounded pieces of sandstone and hard platy, siltstone, pellets of claystone, chert & quartzite granules, & scattered polished pebbles. Fe-stained molds of plant fragments. Matrix fine to coarse grained sandstone. .5'-2.5'

31. Sandstone, medium-grained, massive, cross-laminated, weathers yellow-gray to yellow. 20'

30. Sandstone, as in above but irregularly bedded in beds .5' to 2' thick. Interbeds silty to sandy, gray to lignitic brown shale up to .5' thick, increase in number and thickness downward. 15'

29. Shale, silty, dark brownish gray with plant remains, weathers gray with yellow stain on fracture surfaces. Basal .5' is lignitic shale. Fern and cycad foliage. 1.5'

28. Sandstone, fine-grained, clayey, and sandy claystone; contains plant fragments. 1'

27. Sandstone, medium-grained, massive, friable, forms jointed, broken ledge. Thin layer shaly sand 1' above base. Weathers yellow, yellow gray. 4'
Type section of the Fall River formation

Pieced from exposures in the bluffs of Fall River in the area of the falls and of Evan's Quarry which is on the south side of the river just above the falls. All exposures lie in the N1/2, sec. 33, T. 7S., R. 6E., Hot Springs quadrangle, Fall River County, South Dakota. Unit 7, the Evan's Quarry sandstone of Russell (1928), was measured on the bluff above the road to Buffalo Gap about 900 feet from its intersection with U. S. Highway route 18; units 3 through 6 were measured in a gulley, draining an old quarry, which crosses Buffalo Gap road about 500 feet from the intersection; and additional details of the contact described in the supplement were observed about 200 feet southeast of the gulley along Buffalo Gap road. That part of the Fall River above the Evan's Quarry sandstone, units 8 through 22, was measured from continuous exposures on the northeast side of the river from the foot of the falls southeastward to the bluffs of Skull Creek shale opposite the Power Plant.

Skull Creek Shale (basal part) Thickness in feet.

22. Shale, and silty shale, black, scattered ironstone concretions in upper 0.5. Basal 1.5 is tough black argillaceous siltstone with rusty stain. 4.0'

21. Shale, black, silty. Lower half siltier with pink stain. 2.0'

Needmore sh., red silt, 60'.

7-21-1-56 clay & shale red streaks.

7-21-1-56 "

7-21-2-56 Picture 1-4 Panorama, 5' foot on 7-21-1.

6 hammer 7-21-3.

7-21-3-56 collection 4' higher.
7/21/45 B side with out record
north face near entrance
8 o'clock house & car & me
picture show car & me
at colt. pt.
7-16-56-1 Shale cuttings cable tool.
Water well, black sh. of 30'-82'.
Well 0.35 mi. N. of Cacapon State Pt. W. W. entrance.
On W side of rd. above pond.
TYPE LOCALITY AQUIA FORMATION

Widewater Va. — Md. quad. 1:24000
Passapatanzy quad. 1:24000
Nanjemoy Md.—Va quad. 1:62,50
Washington D.C. cross Potmac River, take
US #1 to Stafford, turn E. on 637 to Brooke.

0 miles at RR. tracks in Brooke, take 608

3.5 miles 621 & 608 Guy House sighn at jct.
continue 608

4.2 miles fork in road, 608 has sight to boat
house, private road on right, take
private road Major Pratt's house

4.8 miles, house. Stop and ask permission
to leave car in field.

Walk south along shore to cliff— this is not
the locality, continue around bend to wider
cliff, this is it.

See Jour. Paleontology, v. 22, p. 399-401 for
section and references.

Coll. 6-1-56-1 Upper 4' of basal 9 foot
shell bed.

Coll. 6-1-56-2 Lower 5' of same bed.

Coll. 6-1-56-3 second shell bed, above indurated
layer.
American Fork Canyon
3rd peckcock 400' east from highway
Hangin' Rock Picnic Area to 3/4 descent red and brown shaly
15 or living shale about 26' above base (crittenden section)
check 10' 15' cliff, sticky up top
Aug 3
Meet Gordon goldstein
Gold Hill Tries
Miss
29586
Newport St.
Engineer Co. Va.
Go to City

Aug 4

Aug 5

Aug 6
Apologies
Alpine. 75 S. of Ogden.
River 1/4 mi. East Bridge
over Riv. at Municipal
swimming pool. Carp in Fort
Park in Ogden.
Slumped clay, pinkish sandy
located less than 1 mi.
from Mountain front.
7/26/15 Gravel

7/26/4 Sand

7/26/3 Pink clay

7/26/3 Pink clay 1 ft below reworked

7/26/4 Sand above clay and below gravel

7/26/5 Gravel No Ostr. Discarded.
Clore & shale in ravine
north 7 road one mile east
White side school, Johnson Co.

Lamontite thickness

US. dk shale weathers light on
surface dense 1' 2"
shaly US. blk very shaly med.
grained 1' 0"
US. dk gray frag.
SH. blk laminated non-joss 2' 6"
US. blk dense, heavy, br. 1' 8"
non' shale
SH. blk laminated
US. lt gray dense 1' 8"
SH. blk laminated
US. med. gray, shaly, brittle 2' 0"
US. lt to med. gray coarse, grained
very porous 1' 0"
SH. tor, med. gray reddish, not laminated 3' 0"
US. lt gray, faint core, coarse, grained 2' 6"
SH. blk laminated to 10' 0
Kinkaid. Yellow shale soft and sticky. fossils, etc. 3 mi. east of old Whiteside School. Johnson Co.

DePoe笔记本.
0238.4

No 11 CF.

Union Co., Carbonale SW 1/4

Ill. Bull 48 p. 5-2 bed 10

in No 11 (F)

beds are numbered in reverse.

Cronceis 7 = Lamar 14

11 = 10

= Cooper Miss loc. 7.
419.91
PS6 (A)
Kinkaid shale, 10', in road ½ mile southeast of Robbs, Pope Co.
Fossiliferous shale at top.
0524.84 P 703
Kmakieed formation in Creek
by mile northeast Whiteside
school, Johnson Co.
NAME Golconda   DATE 8–7

W.595  Golconda formation southwest 7 Ruma Randolph Co.
       Stuart Weller location.
NAME: None

DATE: 204

0619.20 No 4

close formation, essentially
same location as C-1
Cooper 13 = 0709.32
Dongola N.W.
Union Co.

Cooper 13
1
5" shale, green, sandy, oxidized, brown
Sh. q
Cooper 18 (Miss.) Renault
Guadbook 13 am.
Field Conf. Kansas GS, 1939

1st day Stop 6

Paint Cr. bed -3- equiv. to 1952 cc.
Golconda bed -11- cc.
very fine.

Go from St. Genevieve Mo.
Rume, Ill.
South of Freyling's Stone Cabin Rock
Type of Swann's "Freyley"
M. Golconda

Hardinsburg Top of Bluff

5/19/5
LS. ledge 8 1/2 Top Golconda
Loam 1'-2'
LS. ledge
Sh. 2'-3'

5/19/4
LS. Marine 8'-10' (U. Golconda) over
Sh. limestone 3' and LS. Stronger (Freyley)

5/19/6
Sh. about 50' below
5/19/6 in Freyling
about 15' above base

See Kentucky G.S. ser. 11
Bull. 16, 1855 p. 18-119.
5/19/5 Top 7 ft. ledge, very crumbly
5/19/6 Gray sh. just below 8 '1s.
This is the Top of
new "Frayley member" Swann
NAME: Vienna

DATE: May 18, 1959

5/18/9 6" shale above coal and below 5/18/9. Either top of tar spring or shale immediately below Vienna CS.

If calcareous, it is called Vienna. If sandy, it is tar spring.

(F. Water entry?)

5/18/10 Tar spring sh. just below coal 7 5/18/9 Vienna CS just above 1

5/18/11 Vienna sh. across RR tracks 16 ft. above 5/18/9

5/18/12 Brownfield
NAME: Renault

DATE: Cooper 付. 9-11

OS 11-51

Hardin Co., Golconda II

Elm SE SW Sec. 11 T 12 S, R 7 E

N-S road 5-00' N 75 S sec. line
Roadside below top of knot.

"Main Cheltenham Shale horizon"

Field conference 6/38 stop 2 beds

Shale, black, shaly

Road ditch on back side going south.

Renault formation:

Limestone, heavily bedded 3'

Shale, dark, shaly 10'

Interbedded, shale and limestone 10'

Step 16 - same 1938

May 1 1954

Not recoverable

Road built up.
Spurgeon cut "Spurgeon Hill" with J.S. Galloway

film 1, 2 3/4 cut width 15 5/16

5/14/1 Spurgeon is rolled and spalled

HR cut in s. 5 of Spurgeon Hill
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Field</th>
<th>Determined</th>
<th>Locality</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/12/2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In charge.

Collector: | Date: Aug 12, 1899 | Memoranda: |
---|---|---|
Notebook: | Page: |
United States Department of the Interior—GEOLOGICAL SURVEY

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Field</th>
<th>Determined</th>
</tr>
</thead>
<tbody>
<tr>
<td>57/14</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LOCALITY:**

RR 54 sq Sergeant Hill

Salem dirt -20

**Collector:**

<table>
<thead>
<tr>
<th>Date:</th>
<th>Memoranda:</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 14</td>
<td>207 2 beg</td>
</tr>
</tbody>
</table>

**Notebook:**

1954

**Page:**

1
April 6, 1960

Professor Courtney Werner
Department of Geology
Washington University
St. Louis, Missouri

Dear Professor Werner:

Do you remember the Paint Creek locality that is some 14 miles out of Millstadt, Illinois, to which you took me on June 3, 1952?

I finally processed the collections we made, and am pleased to find some very nice ostracodes. I am now embarrassed to discover that I do not have a geographic locality for the collections. Could you please supply me with locality data?

I see Dr. Bassler every so often, Mrs. Bassler has been ailing, but she has improved lately and can again drive their car.

Cordially yours,

G. S. Sohn

L. G. Sohn

Dear Dr. Sohn, Mr. H. has never had the locality. I think it is 7 1/2 miles east of Millstadt to the S.E. 1/2 mile from the road on Vogel School. It is on the Millstadt Vogel School Road. It is 4 1/2 miles N.E. of Waterloo, Waterloo Rd., and is 4 1/2 miles W. of Spencer. It is on Prairie du Long Creek at the old iron bridge. The dirt road going from Vogel School leads to the locality. It is mapped. I don't have a topographic map of the locality. It is 7 miles 1 mile west of Filerville on the same road. It was a neglected road.
Sohn

122  p. 1-50
123  51-100
124  101-150
125  151-200
126  201-end
July 5, 1961


steep hill

Cross C.E. Smith, W.A. & Arlisle, Th., Jr.


of the Upper Pennsylvanian and Lower Permian Strata (Monongahela, Washington and Green Series) in the Northern Portion of the Dunkard Buoy in Ohio, West Virginia and Pennsylvania Sept. 8, 9 and 10.

Shale break approx. 161 above base of Bennett L.S. Member.

Monongahela member above stop. L.S. has scattered ostracodes.

Stop 2, Clay pit. Brick yard at Vance.


7/5/1

7-5/2

Top of Washington L.S. member.

Washington For. Pealed surface.

7/5/3

8'4 below 7/5/2

No rain June 25. Rain July 2

Live ostr. in puddle, permanent water.
July 6, 1961
Sohn: Yockelson
Steward: H. Berry

Stop 1: Ohio Co. 21, 0.8 mi. from Ohio 7, on N. side of road; both side of valley. 2.75 miles S. of Lock 16 on Ohio R.R. Turn left off Co. Rd. 21. First good outcrop. P. 107 Gruzdale at 37.4 mi., 8 p. 10, called Arnotsgarbalzo, in Gruzdale and is 2 cap.

7-6-1-61 Nodular Ls. about 1/2' above main Ls. No little capt in Ls.
+ 7/6/19/56 with chisel.

7/6/2/61 5b. 0.1' above Co. 5' twist about 7/6/1/61

Stop 2: Clark Hill, Monroe Co., Ohio = 2/4/1/56 B Yockelson. Rd past Valley Methodist Church, Monroe Co. Rd. 43.

7/6/3 Plate Ls. 1/2' above nodular layer, high in the Green fms.
Cross called Nineve, in T. section 1 between 54 & 55 at bottom 7 p. very low. Lowest of Ellis' col. 3-4' above 7/6/3 in 1/2' interval, Ls. at 1195 ft. ?

7/6/5 Yockelson col. L. Captiva

Little Captiva
July 6, 1965

Stop 4
5 1/2 NW 1/4 SE 10, Wayne Twp,
Belmont Co., Ohio
Rd 72

7/6/61
[7/6/7 in Redo] lcon
in 4/6/8/61 Center 3
little captins 7/10/32/59
Along career 7 hill
100' up rd. on center 5.16
3 1/2, N # M. little Capt
2 Bogs
Rd is 3/4 mile N 2 Rd 18
Post office at North
7/7/7 Nineveh at Rd. 2 mi from Nineve

7/7/8 Nineveh at Creek level

7/7/9 Nineveh 1st outcrop 1/2 mi NW of Nineveh on 18
assorted lithology.
July 31, 1961

7/8/2 4/10/57
56. at base of 'Little Captina'
along creek
NW side Belmont Co. road 2
0.45 miles E of Ohio 798 (along
Deer Run.

7/8/3 Ayers Lime Quarry
SW 1/4 Sec. 19, Reese Township
Belmont Co., Ohio
Lower Wash. Lime
2 miles N of Martins Ferry

7/8/5 Berryhill Lce. 311
N side Hway 40 Beside
"The Brody" Diner
0.2 mile W of Sugar Hill
2.2 miles E of "S" Bridge
Wash. West Quad.
Highest strat. pt. in

7/8/6 Yarbrough
7/8/7 Rubble L3 1 foot below 1ft L5 which is 2' below 2ft L5
Section on new Rd. N of 40, 15. y Vance, is this in Mineola?
7/8/8 Upper #7 LS #2 going N from 40 Mineola?
7/8/9 Lower 7 3 15 beds on LS #2 N 7 drain in dark greenish, gray mudstone sequence, drain is 3rd N of 40, on E side of rd.
1960
8-1-60 Near base of hill Sandy Hook member - ostr. seq. Guidebook - ostr. not studied. Latest Navarro may be a little younger. Several test forams approx. faunna. Forams 150'-300' Keptic. Plant FA1, Beaches in Peed Bank 15% Plantonic shallower than underlying Nevanic. Coll. in lower part. Photo 13 stop. 1

stop 7 Tinton in cr. dry house, but in cans. Inlet of a hill of Homestead flank by farm. For exam. by post. Photo 15 coll. "Stop 7" is from plowed ditch.
Oct. 9 2nd day Field

Step 1. Little Formaston

Step 2. Walk down field to creek - New Egypt. Based on rare areas. Fossils - many crabs. Megafossils. Coll. near top 6 units. Road is 0.3 mi [3/0 mi] N of post office & Rd 18.
5-22-1
7-22 S, R. 6 E, NE 1/4 sec. 12, Installed hill about 300 yards to SE. Away S 41° W, butter, N. M., slightly less unconsolidated. Below Huaco, age uncertain. Call from that outcrop not found.

Arrive Alamosa Sandstone

5-22-2
Shale with fossils, just below contact with above formation. See USNM Loc. 39746. See E+R SR-01-3

5-22-3
Shale below call. 5-22-2

The above on Alamosa Sandstone.
Away, N 81° E. R 16 S, sec. 8, T 16 S, R 11 E. "Bursum" equivalent (local Wolfcamp) just below Huaco in Huaco Hills. See p. 40 of mile 8.5 SEP 1957 Field Camp.
5-22-1
US Army Loc
39747
See
E2+2
SR-43

This slab above is Carvin's
sent in by Backing
Sactramento is - GSA Doc.

43.55 at junction of M.Hwy to
Alviso Grade 51.31 Historic marker
Dog Canyon 7/7/6

or 7.96 mi. S.7 Dog Canyon marker
Turn E. on rd. across tracks to
loc.
NAME

U. S. GOVERNMENT PRINTING OFFICE

DATE

May 25, 1928


5-25-1
USNM Loc. 39748

W

5-25-2
USNM Loc. 39749

5-25-3
USNM Loc. 39750

15. Between chart, small block 1/2 NE NE SW sec. 25 T. 18 S, R. 3 E. On east side of hill on spur where lead camp of 7 mi. across spur. Will probably be equal in quality.

Picture looking E. One white sample from lead veins where geologist.

SW 1/4 sec. 26 T 18 S, R. 3 E.

Pennsylvanian probably.
Hueco within 1000 ft. 80' above the base. 7 Hueco on N. side of Whitton Canyon. Write Ballard for location.

Quarry strat. by lens, slump from quarry face. Fumarole west for 300 feet. west for 300 feet. foramen E. Henbest.

Roll 2 - picture before George of Don in Franklin.
4-23-1 Raniero stop 1 - 1/2" + or
clay below 1' of sand
in creek bed in plastic bag
collected: name, date, etc.

4-23-2

4-23-3 Woodbury Step 3 not so
glamconite as merchantable
Ostv. fragile

4-23-4 Merchandiseville 2 bags
glamconite

4-23-5 Stop 5 Marshalltown
above ironstone

4-23-6 Marshalltown and coal
above English coal

4-23-7 Wenonah stop 7 of base
top of Marshalltown

4-23-8 Wenonah at coal stop 7

4-23-9 Shell Bed of Wit Kend Slips

4-23-10 Wenonah coal stop 8
4-25-11  Base 7 Wenona or Top 7 wire Laurel Stop 8 Lower creek

4-23-12  Wenona below shelf be 2 Stop 8 near top

4-23-13  Basal Red loam
  3 bags Stop 10

4-23-14  Belknap Homes Tow
  5 ½ above 4-23-13 Stop 10
4-24-1  Homer found in pit dug by Howe - 1 ft below surface
4-24-2  Bristowine Step 2
4-24-3  Kirkwood
4-24-4  Step 8 Mangum
4-24-5  Uncertain Step 8
Morrison outcrop of Lo Roy
p. 64.

7-13-1
Bed 17 g. sec. (chena seen)
2' ± above base.

7-13-2
Bed 10?- Channel sample
on face. 3' + - resistant
layer, first one above
basal 35 = 6' thick. MF-16 C

7-13-3
Bed 7 same as J. H. Smith
previous coll. 2'-2½' channel
section- siltstone. every
called claystone MF-16 D

7-13-4
3'' shale seam above bed 1
NAME

DATE 7/13/59 8:30

W. slope of hogback opposite Matthews Drive at Mt. Vernon Creek: dip 20° in W. hill.
On state Rd. 93. One mile South of intersection 7-13-93.

7-13-8 Silty claystone below 2½' yellow sand - fine grained. - approx 7-13-3 but top 7' bed of Le Roy's section.

7-13-9 11½' hand level above 5½' which is above 7-13-8. This in strat higher than first stop sample is above 1st marlstone in this section. 1st claystone olive green.

7-13-10 Claystone above marlstone approx. 25' above 7-13-9. Still in Morrison above Midway 7 Morrison section.

7-13-11 Rd. 1 ¼" N. 7-13-10 about ¼ mi. S. 1 Rd. inter section.

Habitation just below basal Morrison SS. led.
NAME: Smith  
DATE: 7-17-59

NW 7 Little Mtn. NE 4 sec. 20,  
T 2S, R. 6W. Loc. D-49  
Gravel in cut with ostracodes.

7-17-1  
USNM Loc 39850
Gravel in cut with ostracodes.  
Field relationship suggests  
Grave but no Cystoconus seen  
with hand lens.

7-17-2  
USNM Loc 39851
Fine sand and less than  
25% silt with small  
ostracodes - A dense bed  
interlionsed with gravel  
7-17-1, just above 7-17-1.

7-17-3  
USNM Loc 39852
Coarse lens in fig. 55, about  
10' strat below 7-17-1
W? Little Mtn. under Sec. 20
T. 2S R 6W approx. 4950'
contour

7-17-4
sediments above gravel
seem saline form -
100' +
higher than prove level-
8 7-17-1.

7-17-5
SE cor Sec. 20
T. 2S R 6W - lake beds
probably below prove gravel.
Is this prove? * E T-20
first prominent terrace above
salt lake in this area.

7-17-6
SW ¼ Sec. 25 T. 1S R 7W
El. 4375' 4 15'
may be stoverbury
anything else
about 100' - 150' below
Stoverbury shore lake
bottom deposit overlain by
shoreline gravel.
Promontory Point, Little Valley
Gravel Pit.

- Stake 50-00, 50' S 25' W
- Stake, lake beds above gravel cemented with rufa 4' interval, overlain by gravel. Coll. Top 1 1/2+
- El. 4500' ± 25', Alpine?
- Goode coll. LV-1.

Lake beds above gravel
spit at provo level. Top
gravel is 1935'
El. 150' ± NEG Flag 102

Same as Goode LV-7
Presumed to be the same as pink bed 7-20-1
collected Wolf Flag 102 ± 150'

Pink bed? about 1/2 way between
102 & 110, on E side of
spit 7 coll. 7-20-2

E. end main excavation,
E. side 7 gravel spit
4950' ± 6' pink bed above
gravel
Highest exposure 2
pink bed below Trunculum
Easternmost part cut at 5050' and
10'-12' above id. on
face of cliff, knocked
off by throwing stones.

Same loc. as 7-20-1
bed below gravel
which is below 7-20-1
gravel very thin.
NAME: J. Fred Smith

DATE: July 23, 1959

7-23-1
Smith's loc. 21
lo & softer shale below

7-23-2
Shale below loc. 43,
center w ¼ NW ¼ sec 21 T 29 N,
R 53E, about ½ way between
sec 21 & 41, shale slope.

7-23-3
Loc. 43 loaded with ostracodes
Approximately the same loc.

7-23-4
15. W 1/2 46. sec. 21 T 29 N R 53E.

7-23-5
Loc. 207

7-23-6
200' S 7 orig. loc. 100' ' down
creek.

7-23-7
2 bags = SF-89. Norm L & Deir.
Consents by Hans, etc. for
ostracods.

Pedro Gelabert
Jack Wolfe
5 days leave
NAME: oriel
DATE: 8-5-59

Rock 2 #17 - 8-5-1
Steve on 8-31 & John above

8-5-1
2.9 miles S7 Carter Sec.
line bet 34#35 / 1/2 mile S7 N. e.
T17N R. 115W, Uinta Co. Wyo.
Morrow Creek - lane near Govt. Maj.
N.A. 4s below clam and
small bed, just above road.
Uphermont Green Riv. sediments

8-5-2
4s. on Top 2 Ridge 2 8-5-1
Top of Green Riv.

8-5-3
Bridge possibly old or = T 1958 all.
SW1/4 Sec 35 T. 17N; R. 115W
Uinta Co. Wyo. 3.5 mil SE of Carter
Basal beds of Bridge

8-5-4
Approx center Sec 36
Bridge - probably low to
middle. Outcrop 2nd, 3rd below 15. ledge
#18 ridge 1st outcrop east
center hill on spur below
Grant Co.
NAME: Orel Traylor

DATE: Aug. 5, 1959

8-5-5

Clara s 7 Rd. (Traylor found 2 trees, 4 snails in same area). Lots 79 bones 2.6 in., N. 2 Lone Tree SW NW 1/4 sec. 20 T. 13 N., R. 113 W. Uinta Co., Utah

8-5-6

Upper of two ledges. Stop continue for a long way. Upper part of ledge 1' is siliciified. Lower portion from which sample is taken has snails.

SW 1/4 SW 1/4 sec. 5 T. 13 N., R. 113 W. Uinta Co., Wyoming.
NAME Richen

DATE Aug 6, 1959

8-6-1 Stump for. Silicified. bush.
NENE 1/4 27 T 28 N R 119 W.
North side of Thomas Fork

8-6-2 "Breach horizon"
Fossil. Se. 1/4 SW se 1/4 Smith's Fork
8-6-2 to 8-6-4.

From Center NW 1/4 sec. 26 E 1/4 NW 1/4 NE 1/4 sec. 26 T 28 N R 119 W
North side of Thomas Fork
cell 8-6-2 to 8-6-4.

8-6-3 Shale above 8-6-2 Smith's Fork. * Bear River according to Riverside. # Thermopolis

8-6-4 Nodular US characteristic. 8
Thomas Fork Unit.
Near base of above 8-6-3.

8-6-5 Stanton's Silicified Cakaville
 locality. Ad. Thomas fork cross
 creek. Dump on west side. 74 Rd.
Old Graham Coal Mine. 0.6 mile E 7
NW cor sec. 316 T 28 N, R 119 W.
Upper 17 Cakaville foss. Ruby has
8-6-6 

Rectoron 13 & 54, beeks loc.
Smithfork

SW 19 - 29 N - 117 W unsurrounded

Old Lander Trail Rd.
Calverton
8-7-1

SEC. 31 NEST W 1/4 SEC. 31
T. 26 N R. 116 W, N SIDE
MILL CREEK, COKEVILLE
COKEVILLE COAL MINING FIELD

COAL BOLA & OYSTER & BRACKISH
WATER. THIS IS DIFFERENT FROM
STANFORD SILICIFIED MATERIAL
CLOSE TO TOP OF COKEVILLE

8-7-2

MUDDON LUNA W 8-7-1
COKEVILLE 3/4 WAY DOWN IN COKEVILLE
FORMATION
NAME  Lour

DATE  Aug. 8, 1959

13 13 1
13 06 9  at Jackson
5 2 miles field work

8-8-1

Lower slide lake measured sec published in Oil & Gas Map 122
as zone in Cloven for
NAME: William E. Eyres  
DATE: Aug. 11, 1937

8-11-1 Saw Todd member J. Ellis
SW 1/4 SE 1/4 T. 11 S., R. 4 E.
Galatina, Ca., Mont.

8-11-2 Horizon 7 ft. above
Ten claystone, center see
13 T. 11 S. R4 E, Galatina, Ca.,
Mont.

8-11-3 Skull Creek is 500 yd
Carnig Creek
only see 11 T. 11 S. R4 E

8-11-4 W1/2 Sec. 13 T. 11 S. R4 E
Potemai, Ld. Shale
cliffs for exposure
8-14-1
75' stratigraph. below tip of exposed Elk horn Mt., volcanics,
soft material on either side of 45 with outcrop.

8-14-2
Shaly material 40' below 8-14-1. 10' interval for spore.

8-14-3
70' below 8-14-2 for spore.

8-14-4
125' below # 8-14-3 for Leopold, little bag.

8-14-5
Approx same horizon as 8-14-4 sand beneath 4.

NE/4
Center sec. 34 T 4 N 3 W
Jefferson Co., Mont.
Black MTN.
8-14-6

Juston Top of Granite and  
at base of Tertiary volcanic  
with pine needles.  
SE 1/4, NE 1/4 sec. 3, T 4 N., R  
7 W., Elk Park 8, SW Tr.  
7 clearing "Pine needle tr."

8-14-7

Connection from basal  
unit of Tertiary volcanic at  
lower Mount Shasta.
John Donnell
Bill Culbertson

Chalk Htm. Douglass Cr. Member
Donnell unit 11 11'6" brake
ls. or comy siltstone
and overlying calcareous
siltstone - near top of heap

7-14-1

7-14-2

unit 13 - siltstone
4'-7" below 7-14-1
upper foot

7-14-3

unit 17, upper 3rd of
unit

7-14-4

unit #22 approx middle 8
unit

7-14-5

Wasatch? Tongue units
30-33 Channel sampler

7-14-6

unit 4, one Fish Tooth

NE 1/4 SE 1/4 3T 14S 11W
Mesa Co., Colorado
Cliff opposite Rio Blanco.

7-15-1

1½ beds of brown weathering limy
sand with Cypridea, composed
90% of ostracods. 35' above
base of Green River. Duncan unit 1
possibly a Transition Zone. 7 Swain - 300' W
Sec. 32 T 33 R 94 W.

2½ tons. Lymn about 10' steep.
Below top of ridge 35' above
7-15-1. 1st ridge 4' thick.
Section about 550'-500' = 490'
strat. above 7-15-1 700' W SE
cor. Sec. 32 T 33 S., R 94 W. Duncan unit 24

7-15-2

Veneer on SS. ledge, offset
7½' section West of Rio Grande.
Monte Gulech, approx. same
stratigraphic position as all 7-15-2
but probably 30' higher. 2100'
SW & NE cor. Sec. 35 about 2600' NW 3rd.

7-15-3

Shell material found. Unit 31

7-15-4

2½ beds with gastropods & Ostracods
and 2' calc. above with Ostracods
with & L. J. Boron gast. fossils 3' cut
above. Cut into Ostracod zone. 69' in 15' cut
above 7-15-4. Duncan unit 33.
NAME  D. Duncan

DATE  7-16-58

U. S. GOVERNMENT PRINTING OFFICE  16-37801-1


7-16-1

5W 1/2 Sec. 11 T 1 N R 97 W
Base of Green River to 300' W
3rd Hwy & Pierce Cr. rd.
5' Offset model 55, spined form
abundant 2 bags.
Picture of Duncan standing
on base of form. Bed & frame
on top of bed. 20' above
base of Green River.

7/16/2

Oolitic with oyster 6
feet (hand-level) above
Top of 7-16-1 41' thick bed.

7/16/3

41' bed, 7 oyster beds above.
Oolitic? C. biuncata? *
metalapis?
42' above Top of 7/16/2
Thin Section of this.

7/16/4

Biolens with oysters above
400' above base of Cr.
Kw. N 1/2 (central part) N 1/2
Sec. 30 T 1 N R 95 W
Just N 7 1/2 way # Shults
Ranch.
Ostracode ss. in Gr. Riv.
Morrow member B Gr. Riv.
"N. Y. Henry Fork Wy. Green
River" = 1 "shore" facies
NW "H" below Wy. Gold.
map. 6 "T. m" or "Und. Y." on map
2 or 3 mi. N by S on line
T 12 N R. 10 E W
about 2001 above red beds.
possibly morrow again.
Oxli about 30 mi. S of
City Green Riv.

Picture 14 - S. edge Gr. Riv.
outside of Lamey valley
Jim or Topp, Bill
below.
7-18-1

USA 189, about ½ mile S. junction with Rock Springs Cutoff Rd. just E ½
Fort Hill Quad. 1½" ± calc.

Tuff. about 75'-100' above base of Bridge
Oriel # FH-178. see GG-57-9

7-18-2

1½' LQ. with strata "a" in middle member. Green River - Measured by Bradley 30' above rd. Oriel 1
Tgm unit. Along Fontenelle Creek just east of Fort Hill E. S.
Junction of Dry Hollow Rd.
Fontenelle Cr. about 2 miles W of junction of
Fontenelle Cr. & Green River (River)
7-19-1  Green River Algal bed with oysters. Monument Butte Area. mil 146.0
sec. 13, T. 25 N R 110 W. Upper part of Green River.
7-20-1
3rd or upper most tongue?
Green Riv. near Algal Bed
T 24N R 113W. along
Hwy 189 0.85 miles to bridge
near Rd. to Herschler Ranch along Fort
on Nwete sloping hill
just S of Fontenell Cr. 79
about middle of Tongue
(T9S)

7-20-2
Barely upper limit 7
Green Riv. just above 6
algal zone with gastropods,
very eclectic
Eastern part sec. 9, or W. part sec. 19
T. 24N R. 113W. about 0.2 mile
S of sharp westward turn
along rd. to Herschler Ranch,
Barely east of Fort Hill
Fontinelle Section 7
Donovan 1959, Wyo Geol. Assn. Guidebook
Center SW 1/4 sec. 12
T 24 N, R. 115 W.
FH-44 7 Oriell

called by Oriell Upper
part 7 New Tongue
Wasatch which might
be equivalent particle
East X tower Middle Tongue
of Green Riv.

7-20-64

Fontinelle Tongue of Green Riv
Plastered on dip slope older
rocks. Shale for possible ostracod
near base 7 Tongue

NE side 7 Pine Ridge SW 1/4 NW 1/4
sec. 27, T 25 N, R. 115 W.
NE ¼ sec. 4 T20 N, R.117 W.
S. 7 Kemmerer W. side
7 5 fork 3 Twin Creek.
Bed 11 of section measured at station 3 ± 7. Unit D, (Td) 68' ± above base.
2" - 3" bed ostracodes in lower part of bed.

7-21-2 Claire, Ostr. etc. [reporter's name]
Josh Tracey, #12
4% post bet sec. 3 # 34 T.
NE ¼, NE ¼ NW ¼, sec 5 T.21 N, R. 115 W.
Sage, Lincoln Co., Wyoming.
Put some in acid, crush rest.
Can be: lowest Wasatch Paleocene,
(or upper Cretaceous) [signature]

Jon Rana, Rau
Shield, Montgomery.

7-21-3 Sage, NW W ¼ sec 5 T. 21 N, R. 115 W.
L.S. ledge in "Bulldog Hollow fan".
Taylor has smalls 0.5"-1" long
which are U. T. E. May be 2. oligocene.
Tracey, station 15. Field relations suggest that this may be older than Bulldog Hollow i.e. "Sillies ridge fans" above Tj.
7-21-41 Oriel Sec. 120

On the road
N 1/4 Sec. 4, T. 22 N., R. 117 W.
on Harris Fork Plateau

4" slab on road side, not
found in place

Unit Tg
Robert Taylor Ranch

7-25-55

Discarded

7-25-2

Base of Anasazi member at top Madison according to Fischer, Mich. State.

In Sales Canyon along horse path where contact crosses creek S. side of Cr.
7-26-

Morrison near top on rd. 3 mi W of Conduit rd. junction of log. 1958 Wyo. Geol. Ass. Guides. about 30' below et top
Black Hills

1957

See pp. 404, 1969 for sections
Roth's Type 3 mi. N
Piedmont
1st picture, cell 1
Top 7 Shale below SS line
and Top. 3'2' above line
correlating with 2st line. cognizance
Shale 25's table 8/10/12.
about 5' above SS. Typical
Lodge SS.

8/10/1
3/171
8/10/2
3/897
8/10/3
3/172

3rd pit. Offset South 1/4
Waage's Sec

8/10/4
Upper 1st L Black
Shale. about 5' above Uppermost
Lodge SS 5' below 8/10/3

8/10/5
Morrison near uppermost lime
ledge, below 8/10/4

8/10/6
6' below 8/10/5. Bell says
Lodge is Morrison Shale
between 2 lines, below 9/10/6

8/10/7
Black Shale above 8/10/4. ?
below 8/10/8

8/10/8
Gray clay just below 8/10/8
Rolly says all contact below L-
NAME

DATE 8/11/57

H agriculture & Sutton type
above SS. below which
H & S collected.

8/11/1
above 8/11/2

8/11/2
laminated reinforced clay

8/11/3
variegated clay first
held 8/11/2

8/11/4
sh. with oo ft. 3' t. below
SS. This in H & S.
his red's coming up
float, not in place.

30977
Spring Creek Section of Waage - Morrison?

8/1/15:
1st layer unit, upper part at least 40' below roof.
Top 7 Moons.

8/11/6:
Lower part of 1st layer unit - channel.

8/11/7:
Shale below 8/11/6.

USGS 26934

8/11/8 - 8/11/10 above shapfs (fell riv.)
NO 8/11/81 - 8/11/14

Near Mona Butte, Mapel Loc. 98,
Sec 23 T56 N, R 63 W,
Creek Co. Wyo.

8/11/15:
Mapel Unit 5 ± = Mapel 98-5

USGS 26921

8/11/16:
Mapel unit 10 in lower 10 ft ±

MP - 98-10 = 98-10 ±

8/11/18:
Morrison

8/11/17:
8/12 - 8/13 with Page

No collections.

see also 8/25
NAME  Henry Bell #1.G.S.
U.S. GOVERNMENT PRINTING OFFICE  16-37601-1

8/14/1  West Central  
by 100 ft. well - Good sand 1, 2, 3.  Shale  
with sand tects  etc.  
Chilson canyon, W. cent.  
3' shale above  
2' sand  
3' shale break in middle  -  La kota  
8/14/2  shale break in middle  -  La kota  
8/14/3  uppermost 0.3' just below ss.  
8/14/4  Shale interval below 8/14/3  
0.3' to 3.6' below ss.  
7  La kota ss.  -  Morris  
8/14/5  Sh. from 3.6' - 8.4' below ss.  
8/14/6  Sh.  8.4' - 12.7' below ss.  
8/14/7  Sh.  12.7' - 14.4' below ss.  
8/14/8  USGS  26881  
USNM  39742  
8/14/9  15.  14.4' - 16.2' below ss.  
8/14/10  USGS  26882  
8/14/11  54  = 16.2 - 21.9  
8/14/12  54  21.9 - 30.2  
8/14/13  15.  2' 30.2'  =  32.2'
6.3
5.0

2.9
6.3
6.9.2
2.9.2

2.0

8.2
8.2

2.6
5.6

10BM

8

BM 32.9
23.2

32.9

BM
NAME

DATE 8/14/19

2.3' 55. grading in to below
34' red & gray with
1/2' 600-20 base 55.1 from

8/14/203 above - 21
3 4.9

USGS 26585
8/14/21
Sunsational Top 7 Sundance
Top 7 Sundance 55.1
4.9

Total Distance 60.00

1st Canyon 7.85' 9.4E

8/14/22 mud below brecciated
is on Top 7 Dakota
equiv. to Minnewauki

8/14/23 same interval 3' higher
brown colored

8/14/24 Basal Fuzon above Brecciated
LS. 7 8/14/23 4.5' above LS

8/14/25 Dark Gray Wadslore - Fuzyon 8' 13'
above red LS above 8/14/24
8/14/26 Pale gray mudstone
2' 1/2' above 8/14/25
Fuson about Minewater
13' above LS

8/14/27 Mudstone above 8/14/26
Fuson 23' above LS

8/14/28 Sandy mudstone - Fuson-
above 8/14/27 37 1/2' above LS

The Fuson is considered
as Lakota. Minewater 8/14/22-
8/14/23 in also Lakota

8/14/29 Mud in basal Fall River
on cliff outcrop
above 0 Fuson - 36 inches
at base of SS. above 66 above
LS 7 8/14/23

Hand level Henry Bell.
Lord & Baby's Prospect (claim surrendered from Bell)

Uppely Lake, 55.3. Not located.

8/15/5
Sheep D'Lehown 55.3. 2 1/2' uncorrected

8/15/6
Sheep 1/2' base is 45' below elevation (corrected) and level of bed.

Same bed as 8/15/5
175' feet West of 8/15/5
Picked along cut off road.

Bed in regular in color.

8/15/8
Chilson Canyon. 1' centered 250' below steel.
Reflector dam, all below town 15' limestone.
Monument for Dec. 18.
For block 7 nearly 75\%
sand shale sequence
that has 20% forams
and ostracods very petroleum
Most of the mostooliths eroded.

8/15/75 Silty material above paper
          shale

8/15/75 Very siltly stuff above
          8/15/75 up creek.

8/15/75 Marine unit 674
          in paper sh. below
          8/15/75

8/15/75 15. below it between
          paper sh. below 8/15/75

30991
NAME  Price
DATE  Aug 9, 1987 P.2

8/16/19 Walexot unit 'T' about
lower 1/2 - ss not sampled
Walexot unit 'V'
ss not sampled
8/16/11 Walexot unit 'X' - hand picked
mud/dirt stuff
NE 1/4 Sec 2 T. 88, R 5 E
8/16/12 Upper 16' var. colored
claystone - salt content
12' intervel not sampled
8/16/13 Brick red 8'

8/16/14 Brick red, calc., saltstone
18' channel sample
8/16/15 Unkeeps 88; grab sample
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All of 8/10</td>
</tr>
<tr>
<td>2</td>
<td>All by 8/11 except 8/14/18</td>
</tr>
<tr>
<td>3</td>
<td>8/11/16, 17 and 8/12/11 - 8/14/10</td>
</tr>
<tr>
<td>4</td>
<td>8/14/11 - 8/14/18</td>
</tr>
<tr>
<td>5</td>
<td>8/14/19 - 8/14/27</td>
</tr>
<tr>
<td>6</td>
<td>8/14/28 - 8/15/7</td>
</tr>
<tr>
<td>7</td>
<td>8/15/8 - 8/15/18</td>
</tr>
<tr>
<td>8</td>
<td>8/16/1 - 8/16/7 8/16/9</td>
</tr>
<tr>
<td>9</td>
<td>8/16/8 - 8/16/10</td>
</tr>
</tbody>
</table>

**Notes:**
- Morrison: 40.72
- Lakota: 30.37
- Minnesota: 6
- Fuzon: 4
- Fall River: 11.15

Check the Bell ESR Fuzon or Cost, I said was different # write Goff.
NAME  Gott  
DATE  Aug. 13, 1857  

8/17/1  Dayton's Fuller's earth
Loc. Nw. 1/4 S.W. 1/4, Arapahoe Co.

8/17/2  Lava, trere clay above
Fuller's earth (white
Tuffaceous material

8/17/3  Sample 3/3 up the slope
Fuller's earth for column

8/17/4  White River & Dayton
shown on Sandstone
Black Hills Folio

8/17/5  Houston Mine
Intruded siltstone and
sandstones about thick
Fall Riv. 55. (S 6)

8/17/5  Red Canyon Nw/  
S. and 7 Long Mt.
Base of S 2 55. W. Latona
Elginmont NE 1, SE sheet
E side 7 Red Canyon
where base of Morrison crosses
rd. between Albright and
Fay Ranchie Edgerton
Morrison about 1/2' above
Sun dance.

8/17/11
USGS MRSO 26820

8/17/12
Approx Middle 7 Morrison
Top of Hill about 8/17/11
more calcareous

8/17/13
Road up to Top = Jewel
Cave SW just above gate
SE 1/4 S1/2 T6S, R 25E: Custer Co., S.D.
L. Lakota just above
Morrison

8/17/14
Morrison channel clip
Sample 25' + start about
1' below Top

8/17/15
Calc. Morrison about 40'?

8/17/15
USGS MRSO 26892
Craven Canyon 1st exposure above the entrance. Dark Canyon, E side of Canyon.
Morrison about 11' below Craven Canyon 53.

8/17/6
Morrison 25' below 8/17/6
Morrison, limy at crusted bed color pict. 11, 12

E side of N. foot of N. rim at note see fig. South side of Craven

8/17/9
Shale Craven Canyon

8/17/10
West side stuff down slope of 8/17/9
Page Creek, Jewel Cave SW

8/18/1
Below 8/2 same d., 40' below

8/18/2
Below 8/18/1 dark grey
pit 16 18/1 above yellow as
and 18/2 below yellow as
center 2 picture

Paper shale to left of
litho. No others. No cell.

E. face of Elk Mtn. about 1 mile
S of North Border 7 Deere
Custer Co S.D. below 4800 contour

8/18/3
Dark mudstone about 30' below
Si Lohota SS.

8/18/4
Morrison 40' below Si Lohota
SS

8/18/5
Morrison below upper lime
about 80' below Si \&
or 40' below (control)
Morrison 50' below Si SS.

8/18/6
USGS N760 25893

8/18/6
USGS N760 25894
S.W. 1/4 sec. 22 T. 43 N. R. 60 W. Wyoming Western Co. Clifton Rd. 75 Elk Mts. Lookout

8/15/7 Morrison 4' above 8/16/7

8/16/7 Morrison 6' 1/2 above 8/18/7

pef, 17 - Red Valley from top 7 Elk Mts, just above 8/18/7.
Whipple Canyon near Fancy Peak Bluff 8/18/7

Either Fugom or Lakota seems to be junked up
8/18/10
NAME: D. Bock

DATE: 8/18/13 7:03

North early Whipple Canyon Mand Ranch
Morrison 5-10' before
Lake's paper stake

Morrison Middle 17
pm. which is about
100' - mill. at 32' above
base - Ø7raco lbs
2 bags (see letter)

Rob 0 ft. 10, 1957.

NW 1/4 NE 1/4 sec 29, T 49 N
R. 60 W, Weston Co., Wyoming
Fanny Ranch

slope S by 465

Road through many Ranch.

Maples in 65-11 & 65-13
are lower than 8/18/12
**Form 9-076**

**NAME**  
Mapel

**DATE**  
8/19/57 P.2

---

Mapel loc. 8 oil Creek

8/19/6  
Top unit 3 12' ± above  
8/19/6 - Morrison, O? T. Scam

8/19/9  
Top unit 3 12' ± above  
8/19/9 - Morrison, O? F. Scam

8/19/10  
18' above 8/19/9, unit 6,  
below Lime Bed

8/19/11  
Mason Creek (loc. 194) at Morrison  
20' ± below Top

8/19/12  
Morrison 9' ± below Top

8/19/13  
Lakota - 6' ± above base  
last color pic?
NAME

Mason Creek, Maple Sec. 46

DATE 8/19/57

6/19/14 Sundance 56 # 55. unit 1
about 4'-8' below top

8/19/15 Morrison, Maple unit 8
10' above base 7 Morrison
is green sh.

8/19/16 25 above base 7 Morrison
at base 7 maple unit 10

8/19/17 15' above base 7 Morrison

8/19/18 Morrison, Black Mudstone Top
maple unit 11, 2' below top

8/19/19 Lakhota 2' above top 7 Morrison
unit 13 3/7 maple

Last color pict 7 Maple on
near base of section.
8/20/12 Lakota above 8/20/11 (p.1) 8/20/12 Unit 12 about 20' above Morrison

8/20/13 Upper part unit 3. 17' above base 7 Morrison = cell 112-3

8/20/14 Unit 4. 19' above base 7 Morrison = cell 112-3

8/20/15玛洛尔 112-5, 33' above base 7 Morrison

8/20/16玛洛尔 Unit 6, about 56' above base Nova calcareous - Mot L?
NAME  DATE  8/20/57  P.O.

8/20/17  Sec. 48  T. Mapel, Repton Land.  Comel Creek

8/20/17  Morrison 45'2 above base  Top Maple unit 6

8/20/18  Morrison 45'2 above base  Top Maple unit 6

8/20/19  Unit 12 about in middle, Morrison about 70' above base

8/20/19  DISC

8/20/20  L5p Maple unit 19 (Top of 38-19)  Maple unit kept

8/20/21  Scale just above 8/20/20.  Maple unit 20 = 48-20 gpm kept.

8/20/21  Maple White 6, 7 roll 1.

8/20/22  Sec. 86  Morrison, 5' above base, Maple unit

8/20/23  Morrison, 5' above base, Maple unit

8/20/24  40' above base  Unit 8

8/20/25  75' above base unit 9  No. outraced.

8/20/26  Top 1' 7 Morrison unit 10, rest above
Section 57

8/20/27
Redwater Sl. 20' - 25'
below Top 05X + Forem

8/20/28
Morrison 25' above base. Ostracodes seen

8/20/29
Morrison 30' above base 04% not looked for

8/20/30
Morrison 50' above base

8/20/31
Morrison? 75' above base LAC 55 = Maple

8/20/32
Morrison? 90' above base. Non calcareous

8/20/33
Stockade Beaver road up ridge between Upette and White Tail Creeks - Get loc. from Maple
<table>
<thead>
<tr>
<th>Date</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/21/1</td>
<td>Top of Foxhill Hill. Horse auger at approx. peak 100. N. of Devils Tower 3.7'</td>
</tr>
<tr>
<td></td>
<td>Less above Redwater, sample last 1.5'</td>
</tr>
<tr>
<td></td>
<td>Sec. NW of Devil's Tower. Maple 6' 100.8' Robin had his own see here</td>
</tr>
</tbody>
</table>
| 8/21/2| Morrison 1' below
        | Lowest Ls. 10'-15' above Sundance Maple unit 3                      |
| 8/21/3| Morrison about 30' above base below 45'. Maple unit 3                |
| 8/21/4| Morrison about 45' above base between Ls. Maple unit 3               |
| 8/21/5| Non calc. Morrison about 60' below Top. Maple unit 4                 |
|       | above in Lakota 55                                                  |

_Gertrude
Mrs. Mahoney_
North side of left creek  
NE ¼ sec. 21  
T 8 S  
R 66 W  
C.R., Wyo.  
Morrison beds above line which  
6 ft below massive  
white sand at center of  
section. Robbie unit 9  

8/21/6  

8/21/7  
8' above top white  
middle of Morrison section.  
Calcareous mudstone. Robbie  
unit 11  

"Swimming pool Green" weathering  
mudstone, now calcite. 22'  
above top sandstone  

8/21/8  

8/21/9  
Morrison? Cretaceous.  
mudstone. 6' above 8/21/8  
Sandy mud 11' above 8/21/9  

8/21/10  

8/21/11  
Dark mud 6' above 8/21/10  
and 3' below lacustrine  
complacentic s.s. Top of unit 11  
Color 1 2 7 outcrop. Coll. of  
ridged & left to observer
Cabin Creek Section

Fall River formation (in Part)

32. Sandstone, fine-grained, thin-bedded to tabular, cross-laminated. Upper half contains shaly partings. Fe-impregnated layers, ripple-marked and "worm"-tracked bedding surfaces. Lower part becomes silty downward. 7.7'

31. Siltstone and fine-grained sandstone interlaminated with black shale; laminae locally disrupted by "worm"-working. 1.9'

30. Shale, silty, dark gray, abundant carbonized plant fragments, local ferruginous stain. Fresh water clams rare. Protalliptio douglassi 1.9'

8/21/18 - unit 30

disconformity
Lakota formation

29. Claystone, silty, light gray, minor clayey siltstone, massive; becoming less silty downward. Scattered orange ferruginous specks of weathered siderite, spherulites. 4.3'

28. Claystone, gray, mottled red, some yellow stain, scattered ferruginous specks of weathered siderite. 1.0'

27. Claystone, as above but gray with yellow stain, scattered ferruginous specks of weathered siderite. Becoming silty downward. 1.7'

26. Siltstone, massive, clayey at top, light gray to white, ferruginous specks of weathered siderite thruout. 5.6'

25. Siltstone, friable, gray-white, local clayey lenses and scattered thin hard beds. 2.8'
24. Siltstone, with interbeds fine-grained sandstone increasing downward. Lower 1.0' chiefly sandstone. 2.0'

23. Sandstone, chiefly fine to medium grained with local thin layers chert and quartz pebble conglomerate in lower 5'-10'. Massive to thinly cross-bedded. Weathers gray-white with yellow stain to red brown. 34.0'

22. Obscured by slump. Base of unit 23 above lies in this interval. 3.0'

21. Partially obscured. Upper 5' a soft gray claystone weathering to lumpy crust. 10.5'

20. Claystone slightly sandy, gray, weathers light gray, some scattered coarse grains chert and quartz. 4.2'

19. Sandstone, clayey and sandy claystone; conglomeratic. Coarse grains and granules chert and quartz. Some white claystone fragments in upper .3' may be porcelanitic. Polished chert quartz pebbles in float. 1.0'
18. Claystone, sandy, light gray to dark gray scattered chert granules. Polished chert and quartz pebbles in float. 2.5' 

17. Sandstone, medium to coarse grained, conglomeratic, with interstitial gray claystone. Local zones of sandy conglomerate claystone. Chert and quartz granules and scattered polished pebbles chert, quartz, quartzite. Weathers gray-white. 12.0' 

16. Claystone, slightly sandy, light gray with greenish cast; scattered grains and granules chert and quartz. Crystals selenite. 2.6' 

15. Claystone, sandy, scattered medium to coarse chert and quartz grains, mottled red, reddish gray, gray and purple. 7.9' 

14. Sandstone, fine to medium grained, conglomerate clayey, friable. Scattered granules chert and quartz. Gray, weathers white. 7.9' 

13. Claystone, sandy, scattered chert and qtz. grains chiefly in upper part. Gray—green. 4.0'
8. Sandstone, fine to medium grained and conglom., limey; with some sandy marlstone. Zone sandy to conglomeratic limestone concretions 1' from top and a ledge sandy, conglom., limestone .8' to 1' thick at the base. Conglomeratic material granule to small pebble size chert and quartz. Gray, weathers white, limey layers brown.

3.3' 

7. Sandstone, as in unit 8 above, limey thruout, with 2 or 3 zones small, hard, sandy to conglomeratic limestone concretions and several conglom. zones including indurated basal limey bed up to 3.5' thick which contains carbonized plant fragments. Weathers grayish white, some brown stain.

19.2'

Total beds included in Lakota (rounded) 167'
Morrison formation (?)

6. Marlstone, sandy, and marly sandstone. Few scattered chert and quartz granules. Gray and dark gray in upper part becoming light gray near base. At base is thin red marlstone which thickens laterally to include lenses of orange-brown weathering limestone up to 2'.


3. Sandstone, fine-grained, limey, weathers to platy brown ledge.

2. Chiefly obscured, slope on variegated marlstone.

Sundance formation; Redwater shale member.

1. Sandstone, medium-grained, calcareous, weathers to yellow, slope wash.
NAME: Robert Robinson
DATE: 8/21/57, p.m.

Fall River Section on Cabin Creek
N 1/4 sec. 8, T. 52 N., R. 66 W.
Measured by Robinson.

8/21/19 Fall River claystone
directly above "No. 1" sand
8/21/20 31' above Top of "No 1" sand
8/24/21 Salt above "No 2" sand

8/21/22 Outcrop Gypsum springs
South secondary Hill M
between Heald and
Devil's Tower. Inter-
measured at public stock
section. Mudstone very
cale. 24.1
West side 7 cut.

8/22/57 Rain
Sections 1500, S 4 & Homestead pit No. 5, Hildale Sec. 8

2/23/9

About 5' above "No 1" sandstone Full River.

Robinson's NE Newcastle section
"Newcastle No. 1"
Skull Cr. 1' below base of Newcastle, bentonite clay shale (used salt)
8/23/10
8/23/11
8/23/12

Newcastle above yellow sandy unit, 10'-11' above base
1' above upper Newcastle siltstone, basal unit of Mowry (Nevada ? colliery)
8/23/13
8/23/14
8/23/15

Top of "Nevada ? colliery") 3 1/2'

above 8/23/14, just below silicious Mowry.
Government Canyon section
Grass covered flat

Thickness in feet.

Fall River formation (approximately at Skull Creek contact)

63. Partially obscured, fine-grained, thin-bedded sandstone with thin interbeds, gray shale. 3.0'

62. Sandstone, fine-grained, thin-bedded, with numerous red-brown Fe-impregnated layers and vermicular concretionary Fe masses. 2.0'

61. Sandstone, fine-grained, chiefly massive, friable. Some zones platy to shaly sandstone and siltstone in lower part; scattered thin Fe-impregnated layers. 12.0'

60. Shale, gray, silty; weathers brownish, with thin interbeds siltstone. Upper 2.0 feet chiefly siltstone beds with some silty shale and fine-grained sandstone interbeds. 8.0'

59. Sandstone, fine-grained, thin-bedded, white; few thin beds gray shale. 0.7'

58. Ironstone, concretionary ledge, weathers purplish brown. 0.6'
57. Shale, gray, thinly interbedded and inter-laminated with siltstone. 3.4'

56. Shale, dark gray to black at base to gray at top. Siltstone laminae become more numerous upward. 2.9'

55. Shale, light gray, silty. Capped by thin layer ferruginous, fine-grained sandstone with "worm" borings and casts. 0.7'

54. Shale, carbonaceous, "paper shale" in upper 1.0 foot, grading downward to slickensided black, finely silty clay shale. 2.6'

53. Shale, gray, silty, stained red to pink. Carbonaceous fragments. 0.5'

52. Sandstone, fine- to medium-grained, cross-laminated, weathers buff with much local brick red to orange staining. Upper 7.0 to 10.0 feet massive, below this, beds 0.5 to 2.0 feet thick with some shaly sandstone partings. 15.0'

51. Siltstone, clayey, laminated, interbedded with silty clay and thin lenses cross-laminated sandstone. Clayey siltstone gray, with pink and lavendar stain; some Fe-impregnated layers. Much "worm"-working evident. 2.2'
50. Siltstone, clayey, gray with carbonaceous flecks. Locally a silty shale. 1.0'

49. Sandstone, fine- to medium-grained, in thin beds up to 1.0 foot thick. Beds massive to laminated and cross-laminated, some silty layers, many "worm"-worked, friable beds. Upper 1.1 feet laminated, white, with ferruginous, brown cap; remainder buff and brown, basal 1.5 to 2.0 feet Fe-impregnated. Ripple marks, "worm" casts, and trails on bedding surfaces. 10.6'

48. Siltstone, shaly, inter-laminated with silty shale; scattered layers siltstone in upper 1.4 feet. Weathers to crumbly, gray-white face, commonly with crude vertical columnar structure. 5.7'

47. Sandstone, fine-grained, irregularly thin-bedded, to laminated, some inter-bedded shale, chiefly in lower part. "Worm" casts and trails on bedding planes. 2.1'

46. Sandstone, fine-grained, massive to vaguely laminated, weathers yellow gray. Thins out locally. 1.3'

45. Sandstone, fine-grained, locally inter-laminated with dark gray, sandy shale, carbonaceous flecks. 0.9'
44. Sandstone, fine- to medium-grained, laminated to thin-bedded, cross-laminated, minor partings sandy shale. Bedding irregular, some ripple marks and "worm"-tracked surfaces. 4.5'

43. Sandstone, fine-grained, massive. Basal 0.9 Fe-impregnated, brown. Remainder weathers yellowish gray. 2.5'

42. Sandstone, fine-grained, silty, locally clayey, friable, irregularly bedded, weathers light buff. Many "worm"-worked layers, Fe-impregnated, weather brown. 2.0'

41. Siltstone, gray, sandy, massive to shaly. Scattered carbonaceous fragments. Weathers gray-white to light gray. 0.8'

40. Shale, sandy, gray at top, reddish purple in lower 0.3' 0.5'

39. Sandstone, fine-grained, cross-laminated, hard. 0.5'

38. Sandstone, fine- to medium-grained, "worm"-worked throughout. Weathers crumbly, light buff to pinkish gray. 1.1'

37. Sandstone, medium-grained, chiefly massive, cross-laminated, buff-weathering. Red, Fe-impregnated crust on surface is
37. (continued)

"worm"-tracked. Many slender, vertical "worm" tubes extend from top to base of bed. 2.0'

36. Sandstone, medium-grained, even-bedded, Fe-impregnated, weathers banded shades brown and red brown. Bedding surfaces "worm"-tracked. 1.5'

35. Siltstone, interbedded with silty gray claystone. Latter predominates in basal 0.5 foot. Siltstone layers with pink to yellow brown ferruginous stain. Upper 1.0 foot has interbeds fine-grained sandstone. 3.4'

34. Shale, gray to dark gray, silty. 2.8'

33. Siltstone, sandy, interbedded with shaly siltstone. 1.8'

32. Shale, gray, silty. 1.0'

31. Shale, sandy, pink to reddish purple. 0.5'

30. Sandstone, fine-grained, thin-bedded, laminated to cross-laminated, weathers buff. Some sand shale interbeds in upper 1.5 feet. 7.0'
29. Sandstone, fine-grained, massive, cross-laminated, weathers buff. Ripple marked. 1.1'

28. Sandstone, fine-grained, inter-laminated with siltstone. Scattered Fe-impregnated ledges 0.1 to 0.3 foot thick. 1.6'

27. Siltstone, shaly, laminated to thin-bedded, locally clayey. Scattered, thin, Fe-impregnated beds with "worm"-tracked surfaces. 4.6'

26. Ironstone, concretionary bed. 0.3'

25. Shale, gray finely silty to sandy, hard. 1.4'

24. Sandstone, fine-grained, carbonaceous fragments throughout, weathers light yellowish-gray. Lower 1.5 feet with interbeds gray, clayey siltstone. 3.2'

23. Shale, lignite, locally a shaly lignite. 0.5'

22. Siltstone, dark gray, grading upward to dark gray silty claystone. Carbonaceous fragments throughout. Lenticular. 0-1.3'

Total measured thickness Fall River (rounded) 120.0'

disconformity
Lakota formation (top only)


20. Sandstone, fine-grained, argillaceous, gray-white, local purplish streaks. Grades into unit below.

19. Claystone, silty, tough, locally flinty, gray with local orange to red concretionary masses made up of limonitic ooliths of weathered siderite spherulites.

18. Claystone, soft, plastic, purple in lower part grading up into green gray with purple mottling.
Maple see 55 Northern side 7 moore canyon sw.
see 35 67 57 ny 85 Wy dumb. Co. Wyoming

USGS Map 26917
8/23/21
Top of unit 5 Morrison

8/23/22
Dark gray cherty limestone above
and below 17 limestone
and some of the fine boulder
ledge 17 above lamy

Unit 9, 3 above base
non-claye split cherty
with fossil bone alwood

8/23/23
Top 1 of maple unit
9 & Morrison

8/23/24
Lakota unit 10 27 31
above base

Color 7 & Hellet
and valley & belle fourche

riv
NAME
C.S. Robinson

DATE
Aug. 24, 1957

USGS Mes. No. 1205-4
E ½ sec. 25 T 56 N R 68 W North of Mud Creek on New Haven-Rocky Point, Wyo. Road
Lower part of Gammon ferrous member of the Pierre shale

8/24/1

8/24/2

8/24/3

8/24/4

8/24/5

8/24/6

Forman's Forman's Forman's Forman's Forman's Forman's
United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE

In charge.

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Field</th>
<th>Determined</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/20/3</td>
<td></td>
<td></td>
<td>lachote</td>
</tr>
</tbody>
</table>

LOCALITY: lachote mudstone

Mapel unit 15 80'
above base lachote

Collector: Mapel
Date: 8/20/57
Memoranda: 

Notebook: 
Page: 1
United States Department of the Interior—GEOLOGICAL SURVEY

<table>
<thead>
<tr>
<th>SURVEY OF THE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In charge.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No. 8/20/19</th>
<th>Name</th>
<th>Field:</th>
<th>Determined:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOCALITY:</th>
<th>Corral Co.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar. 44 - Unit 12 (middle)</td>
<td></td>
</tr>
</tbody>
</table>

DISCA
ded

about 70' from base 10m

<table>
<thead>
<tr>
<th>Collector:</th>
<th>Date: 8/20/57</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Notebook:</td>
</tr>
<tr>
<td></td>
<td>Page: 3</td>
</tr>
</tbody>
</table>

Memoranda:

Collector: | Date: 8/20/57 |
-------------|---------------|
| Notebook:   | Page: 3 |

16-20967-1  GPO
NAME
U.S. GOVERNMENT PRINTING OFFICE 16-37601-1

DATE Aug 24, 1957

106

8/24/7
Descended

65' above base (100' above to 72.5') Turner member of Carlile

30' vertically below massive concretion 72' bed near top of Sage Breaks member 3 Carlile. 7m.

3/24/8

Niobrara 7m. 115' feet horizontally 25' above base of Niobrara.

Get strat. distances of all this section.

6/24/8

Outcrop Great 65 bed of Gypsum ferruginous indurated of Pierre shale at Driscoll

OCr (Mitten Prong) North bank see. 14, T56 N, R68 W.

Crook Co., Wyo.

3/24/11

Sec. 14 T NW1/4 see. 14 T 56 N. 7m. R 68 W Crook Co., Wyo.

Mitten Bluff sh. member, Pierre sh., Top 100 feet.

Disc.
Mona Butte section

Fall River formation (in part) Thickness in feet.

31. Sandstone, medium-grained, cross-bedded to cross-laminated, friable, weathers ochrous red to orange. 5.3'

30. Sandstone, medium-grained, massive, ledge-forming, crudely tabular, cross-laminated. Weathers variably yellow gray or orange-red. Considerable ferruginous cement, concretionary layers, and scattered small, hollow concretions. Basal 0.1 foot is ironstone. 51.0'

disconformity

Lakota formation

29. Siltstone, clayey, gray, weathers to white clayey wash. Peppered with ferruginous specks from weathering of spherulites of siderite. Becomes sandy at base. 4.7'

28. Sandstone, fine-grained, massive, upper 0.5 to 1.0 locally quartzitic. Light gray to yellowish gray. Locally has vertical tubular ferruginous concretions. 2.7'
27. Sandstone, fine-grained, friable, locally clayey. Scattered yellow ferruginous specks from weathered siderite spherulites.


25. Sandstone, coarse-grained, locally conglomeratic, friable.

24. Sandstone, as in 26 above.

23. Conglomerate, granule to small pebble, chiefly gray to black chert and quartzite, some claystone.

22. Obscured by slope wash, upper foot appears to be conglomerate as above with claystone matrix.

disconformity (?)

21. Sandstone, fine-grained, clayey, friable. Some interbeds sandy gray claystone.

20. Claystone, sandy, dark gray, with irregular laminae and thin lenses fine-grained sandstone.
19. Sandstone, fine-grained, irregularly interbedded and laminated with dark gray to carbonaceous sandy shale and claystone. Friable.

18. Sandstone, medium-grained, white-weathering, friable, alternating with dark gray to black shale. Alternating beds chiefly 0.4 to 1.0 foot thick. Plastic,

17. Claystone, dark gray to black, some shaly with leaf fragments at top. Sandy at base. 8/25/2 upper part of unit. 8/25/3 lower part of unit


15. Claystone, sandy, light gray; grades to unit below.

14. Sandstone, medium-grained, friable, becoming increasingly more clayey downward.

13. Claystone, sandy, to clayey sandstone. Light gray, weathers yellowish gray.

12. Sandstone, medium-grained, friable. Gray, with partings shaly lignite in basal 2.0 feet.
5. Claystone, sandy, locally a clayey sandstone, gray.  

4. Sandstone, fine to coarse-grained, conglomeratic in lower 6.0 feet. Granules and small pebbles of chert and quartzite. Chiefly friable with lower 2 or 3 feet locally a resistant ledge.

Total thickness of Lakota (rounded)  

Morrison formation (?)  

3. Chert, irregularly bedded, gray-white to yellow gray.  

2. Claystone, locally sandy, with lenses slabby, fine-grained sandstone at top. Upper half is gray with greenish cast.  

1. Sandstone, fine-grained, with veinlets gray chert.  

Slope wash  

Color 9 ft 10 roll 2  

Mora Butte
K.M. Waage
Peabody Museum
New Haven, Conn.

Mr. I. G. Sohn
338 U. S. National Museum
Washington 25, D. C.
March 3, 1958

Dear Greg:

Sorry to be tardy with this but campus mail took two days to get this your card from Geology Bldg. to Peabody. Spring Creek locality as follows-

West bank of Spring Creek behind old Morrison farm in NW cor., SE$_4$, SE$_4$, NW$_4$, sec. 30, T.6 N., R.5 E., Sturgis 7.5 minute quad., Meade Co., South Dakota.

Glad to hear ostracods are behaving.

Sincerely,

[Signature]
Morrison, just below = 8/11/17
which is Mereb 98 - 15
This is Dumbell Morrison
Morrison, 10' below
carbon shale at base
of Lakota

Morrison, red yourself
claystone, great at top
chert nodules, sample 19' below
Lakota

Morrison, dark claystone
above Lb. 20' - 22' (channel)
below Lakota

Morrison, 6' and claystone
just below, 23' below
8/25/16

Color: 11/2/13 8' at 98. Evidence on
Morrison.
Gypsum springs section part 2
subsidence and spe creep formation
E. side Belle Fourche River
opposite the mouth of Deep Cr
SW 1/4 sec 3 T 55 N R 64 W
Crook Co. Wyo. (Nephi & Agnesville
1956 A & P Boll, 40, 40, p. 24)

8/25/11
Unit 9. "Playstone green
$1.00"

9/25/12
Unit 11, one foot below
Top - loaded with eggs

6/25/13
Unit 14, Top of Gypsum
springs fm.

Look up E&R for Maple
listing Cytherella
Color - 14 - section
red in Spearfish
See Wyo. Geol. Assoc. Guide. 12th. Field
Conf. 1957 p. 47.
NAME

J M Delong  Sun Oil Co.  Casper  Wyo.

DATE

Branson, Inc.
3 mi S of Maywood
7-11-1 Type Mornin', Denver
Lowest Clay point 8' in LeRoy & Goldner. Gray clay
2 more units: Top 2
Unit, just below 2c.

7-11-2 Bottom 2', 7 unit 3 7-11-1

7-11-3 Above 7-11-2 in alternating 2c
+sh. zone: LD: 63' 25.
15 in. 8': LeRoy LD-64
+ Clay is LD-65.

7-11-4 10.6' above Gray Sh. 65 unit
LeRoy LD-18, 2D-4/3

7-12-58 Picture H Continental Divide
Loveland Pass U.S. 6 Looking W
Elevation 3,410'
<table>
<thead>
<tr>
<th>Units</th>
<th>Thickness (Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>86. Conglomerate, grits, and sandstone, maroon to gray, arkosic; interbedded red shale</td>
<td>85</td>
</tr>
<tr>
<td>85. Conglomerate, coarse persistent with large limestone pebbles</td>
<td>16</td>
</tr>
<tr>
<td>84. Similar to unit 86</td>
<td>54</td>
</tr>
<tr>
<td>83. Limestone, dark gray, very impure, nodular</td>
<td>0.8</td>
</tr>
<tr>
<td>82. Conglomerate, cross-bedded, gray, arkosic</td>
<td>3</td>
</tr>
<tr>
<td>81. Shale, green with some interbedded nodular limestone. (Few fossils?) (Roth and Skinner No. 178)</td>
<td>7</td>
</tr>
<tr>
<td>80. Conglomerate, grit, sandstone and shale, maroon to gray, arkosic</td>
<td>58</td>
</tr>
<tr>
<td>79. Shale and sandstone, brownish maroon to gray with micro-fossils</td>
<td>39</td>
</tr>
<tr>
<td>78. Limestone, dark gray, nodular appearing, with interbedded shale. Fossiliferous. Probably Roth and Skinner No. 177</td>
<td>6</td>
</tr>
<tr>
<td>77. Grits, sandstone, and shale, maroon and gray, arkosic</td>
<td>113</td>
</tr>
<tr>
<td>76. Sandstone, light gray, medium to coarse, arkosic, rather soft at top</td>
<td>3.5</td>
</tr>
<tr>
<td>75. Shale, maroon and green, micaceous</td>
<td>1</td>
</tr>
<tr>
<td>74. Sandstone, blue gray, calcareous medium-grained, weathering brown</td>
<td>0.7</td>
</tr>
<tr>
<td>73. Shale, dark gray to greenish gray, micaceous. Largely covered</td>
<td>47</td>
</tr>
<tr>
<td>72. Limestone and interbedded shale, dark gray, fossiliferous. (Probably Roth and Skinner No. 175)</td>
<td>9</td>
</tr>
<tr>
<td>71. Sandstone, coarse, gray, arkosic</td>
<td>15</td>
</tr>
</tbody>
</table>
Herbest:
Loc. 177 to 150' N of Road on a low hogback in and beneath a 9' interval of nodular limestone which makes the hogback and shale marl.

This horizon crosses the road 344'-363' W of Center, 7' bridge over Rock Cr. near the post office.
<table>
<thead>
<tr>
<th>Units</th>
<th>Thickness Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>70. Shale and limestone nodules, dark gray. Mostly covered and variable in thickness. Fossiliferous. (Probably Roth and Skinner No. 174)</td>
<td>5</td>
</tr>
<tr>
<td>69. Sandstone and shale, gray, coarse. (Cross over from north to south side of road)</td>
<td>7</td>
</tr>
<tr>
<td>68. Shale, black to dark gray, micaceous. Interbedded, light gray, fine sandstone</td>
<td>40</td>
</tr>
<tr>
<td>67. Sandstone, gray, coarse, arkosic</td>
<td>8</td>
</tr>
<tr>
<td>66. Shale and sandstone, black to gray, interbedded. Mostly covered</td>
<td>15</td>
</tr>
</tbody>
</table>

Measured 1 mile northwest of Bond

A break of unknown thickness probably exists between unit 66 and unit 65

65. Shale, red and gray sandstone | 28 |
64. Shale, interbedded, green; dark, massive, fossiliferous limestone | 10 |
63. Shale, dark to brick red, micaceous; massive gray sandstone; pink grits striped with maroon and cross-bedded. (At 70 feet are 3 limestone beds, 1–3 inches thick, interbedded in shale) | 140 |
62. Limestone, dark, massive with interbedded shale, fossiliferous | 6 |
61. Shale, green | 3 |
60. Shale, dark red | 8 |
59. Grits, pink, arkosic, maroon streaks | 33 |
58. Shale, maroon, interbedded with gray micaceous sandstone | 36 |
57. Shale, black, interbedded with light-gray micaceous sandstone | 57 |
56. Grits and conglomerates, pink, arkosic, cross-bedded | 100 |
55. Shale, black, fissile; interbedded micaceous, light gray sandstone | 60 |
<table>
<thead>
<tr>
<th>Units</th>
<th>Thickness Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>54.</td>
<td>Shale, green and black, micaceous, containing fossil plants</td>
</tr>
<tr>
<td>53.</td>
<td>Grits and conglomerates, pink, arkosic</td>
</tr>
<tr>
<td>52.</td>
<td>Sandstone, grits and conglomerates, light gray, grading into dark shale at top</td>
</tr>
<tr>
<td>51.</td>
<td>Shale, carbonaceous</td>
</tr>
<tr>
<td>50.</td>
<td>Grits and conglomerates, pink, arkosic</td>
</tr>
<tr>
<td>49.</td>
<td>Sandstone, thin, micaceous, light gray. Interbedded greenish-gray shale. Sandstones contain fossil plants and many peculiar markings. (Walchia Bed)</td>
</tr>
<tr>
<td>48.</td>
<td>Conglomerate, cross-bedded, grayish red, arkosic with pebbles as large as 7 inches across</td>
</tr>
<tr>
<td>47.</td>
<td>Shale, maroon and green, micaceous. Thin-bedded sandstone and conglomerate near center about 2-4 feet thick</td>
</tr>
<tr>
<td>46.</td>
<td>Similar to unit 48</td>
</tr>
<tr>
<td>45.</td>
<td>Shale, black, micaceous; fine sandstone</td>
</tr>
<tr>
<td>44.</td>
<td>Similar to unit 48</td>
</tr>
<tr>
<td>43.</td>
<td>Shale, maroon, micaceous</td>
</tr>
<tr>
<td>42.</td>
<td>Conglomerate, light gray to maroon, highly cross-bedded and containing thin layers of dark-maroon shale</td>
</tr>
<tr>
<td>41.</td>
<td>Shale, blue and maroon, micaceous</td>
</tr>
<tr>
<td>40.</td>
<td>Limestone, interbedded with shale similar to unit 41. Contains fossils</td>
</tr>
<tr>
<td>39.</td>
<td>Conglomerate, bluish gray, arkosic</td>
</tr>
<tr>
<td>38.</td>
<td>Shale, dark gray, micaceous</td>
</tr>
<tr>
<td>37.</td>
<td>Similar to unit 39</td>
</tr>
<tr>
<td>36.</td>
<td>Shale, greenish gray and maroon, micaceous</td>
</tr>
<tr>
<td>35.</td>
<td>Conglomerate, cross-bedded, maroon and gray, arkosic; interbedded maroon shale</td>
</tr>
</tbody>
</table>
Belden shale 402.7 Henbest
West side 7 US 6724
16.0 miles E. along rd.
from Glenwood to Dotsero
Road cut Nudge edge 7 Broadplice
in Colorado River Canyon.

Marq 4 Ls. Belden 5h 26" Stop
C91. Mola 5'12"
Leadville Ls. 10'

Shale 4 Ls. Belden
above Ls. + C91

7.6 miles East 7 roads to
Springs Bridge
7. 6 miles East 7 roads to
down town.
3. A varied interval generally including thick-bedded to massive brown-weathering sandstone bodies with some claystone in upper part.  
25 - 35

2. Chiefly ostracodal shale and some thin beds of limestone in upper half, lower half generally underlies slope wash.  
70 - 90

1. Brown-weathering sandstone bodies, similar to those in 3 above, interbedded with siltstone and silty claystone.  
40 - 50

Morrison formation
9. Siltstone, green, with interbeds of sandstone up to 1 foot thick. 9.0'

8. Sandstone, fine-grained, massive with indistinct cross lamination and bedding; weathers yellowish brown with red splotches; cliff-forming. Abundant grains of white clay in upper part. 23.0'

7. Siltstone, grayish green. 2.0'

6. Sandstone, fine-grained, yellowish brown with splotches of pink. 3.0'

5. Partly covered. Lower portion brownish gray carbonaceous siltstones with interbeds of fine-grained white sandstone. Upper 20 feet chiefly greenish gray to red siltstone. 76.0'

4. Partly covered. Interbedded fine-grained sandstone and siltstone. Sandstone in beds up to 1 foot thick, gray, siltstone platy, brownish gray, carbonaceous. 13.0'

3. Sandstone, fine-grained, white, chiefly massive, ledge-forming, faintly cross-bedded. Lower 5 feet composed of lenses with intervening seams carbonaceous silt. 57.0'

2. Siltstone, green, with interbeds of sandstone up to 1 foot thick. 9.0'

1. Sandstone, fine-grained, massive with indistinct cross lamination and bedding; weathers yellowish brown with red splotches; cliff-forming. Abundant grains of white clay in upper part. 23.0'
2. Covered slope. Limited crop of brownish gray carbonaceous shale about 10 feet above base.

1. Sandstone, very fine-grained, tabular, forms massive cliff. Weathers light pinkish tan with yellow Fe stain and carbonaceous splotches. Upper portion contains up to 5 percent white clay grains. 31.5 to ?

Slope wash

Total Lakota measured (rounded) 393.0
Arche Creek Section

Fall River formation (in part)

26. Sandstone, fine-grained, irregularly thin-bedded, cross-laminated, some massive beds, partings of shaly siltstone. Local Fe impregnation. Forms buff, shelving ledge. 6.3'

25. Sandstone, as in 26 above but more thinly bedded and becoming shaly. Grades to interbedded shale and siltstone about 2' from top, and into dark silty shale in lower foot. 4.0'

24. Siltstone, hard, interbedded with clayey siltstone and dark gray silty shale. Plant fragments common. Weathers to crumbly gray-white and yellow-gray ledges. 6.0'

23. Siltstone, clayey, and silty claystone; hard dark gray to black with numerous plant fragments. 3.5'

Disconformity
22. Claystone, waxy, gray to light gray, soft above becoming silty and tougher downward. 3.5’

21. Claystone, silty, variegated, tough in upper part becoming silty softer downward, gradational with units above and below. Chiefly red and reddish-brown, mottled with green in lower foot and with purple and green in upper 1.5 foot. 4.9’

20. Claystone and shale. Upper 3.8’ chiefly greenish gray silty claystone; basal 1.5’ soft waxy shale, probably bentonitic, light grayish green. 5.3’

19. Sandstone, fine-grained, thin-bedded, cross-laminated, micaceous; thin interbeds light gray shale. Bedding with ripple-marks and “worm” tracks. Weathers light gray to yellow gray. 3.6’

18. Shale, light gray, weathers yellowish to olive gray. 5.3’
17. Claystone, silty, upper 2.5' black, becoming dark gray and gray below.  4.5'

16. Siltstone, and silty claystone, hard, light greenish gray.  1.2'

15. Claystone, soft, gray to dark gray.  2.6'

14. Claystone, silty, hard, locally a clayey siltstone, Scattered coarse grains of chert and quartz. Dark gray and black.  5.3'

13. Siltstone, clayey, massive, hard. Contains sand as coarse scattered grains of chert and quartz. Weathers light gray.  4.0'

12. Claystone, silty, dark gray, hard.  1.0'

11. Claystone, sandy, hard, dark gray with some irregularly interbedded sand at base.  2.3'
10. Sandstone, fine to medium grained, conglomeratic. Some interstitial clay, poorly consolidated. Chert and quartz granules and a few polished chert, quartz, and quartzite pebbles, up to .3' in diameter, scattered throughout. Basal .2' to .4' is chiefly a granule and small pebble conglomerate, are locally chertified in irregular, gray-white tabular masses.


8. Claystone, sandy, light gray with greenish cast. Scattered chert and quartz granules in upper 2 feet. Basal 0.5 feet is clayey, conglomeratic sandstone with scattered polished pebbles of chert, quartz and quartzite.

7. Claystone, sandy, conglomeratic, local lenses clayey conglomeratic sandstone. Conglomeratic material is chert and quartz granules and small pebbles. Upper 4.0 feet gray to dark gray, then 3.0 feet yellowish gray, remainder is light green.
6. Partially obscured. Upper 3.0 to 8.0 feet is sandy vivid green claystone with local lenses clayey sandstone with chert and quartz granules. Laterally these green claystones are not sandy. Basal 8.0 feet, completely obscured, has fossil wood in float.

5. Sandstone, fine to medium grained massive, cross-laminated, weathers white.

4. Claystone, partially obscured, variegated, chiefly greenish gray in upper 10.0 feet, beneath this about 3 feet variegated red and green. Basal 10 feet obscured.

3. Sandstone, medium to coarse grained and conglomeratic. Conglomerate lenses of black, gray and white chert, black predominating. Basal 3.0 feet is similar conglomerate.

Total thickness Lakota

150.6
Morrison formation.

2. Claystone, silty, stained tan to brown. 1.5-2.5

1. Claystone, gray green, grading within about 8 feet to marlstone; thin beds of limestone begin about 18 feet from top. 27.0?
or more feet greenish gray. Few scattered polished pebbles in float may be from this unit or sandstone above.

11. Sandstone, fine-grained, to sandy siltstone, soft, grayish white, local secondary calcite cementation.

10. Claystone, greenish-gray in upper 7 feet, below which is a 1 foot red band; lower 7 feet gray to black with local lens of hard, fine-grained, pyritic sandstone at base.

9. Claystone, dark gray to black, shaly at base.

8. Shale, gray to greenish gray, with interbeds of dense light gray limestone. Contains charophytes, ostracods and poorly preserved gastropods.

- *Clavator harrisi*
- *Chara voluta*
- *Aclistochara aff. A. mundula*
- *Cypridea inornata*
- *Metacypris angularis*
- *Metacypris persulcata*

Total thickness (fathoms) included at Lakota 108.0
Morrison formation

7. Claystone, greenish gray, maroon, and red.  
38.0

6. Claystone, dark greenish gray and dull red; top 11 feet contains tabular light gray limestone concretions as much as 10 feet long and 3 feet thick with a rude cone-in-cone structure. Dinosaur bones in lower 25 feet.  
67.0

5. Limestone, light gray, dense; forms a ledge.  
2.0

3.0

3. Limestone, grayish-white, sandy, laminated; laminae are contorted and the bed is brecciated locally; contains vugs filled with coarse crystalline calcite.  
2.5
2. Claystone, greenish gray, calcareous.  

Total thickness beds included as Morrison (rounded)  

1.0

114.0

Sundance formation; Redwater shale member

1. Sandstone, grayish-yellow, fine-grained, calcareous, shaly at base; forms a weak ledge.  

3- ?
Inyan Kara Creek Section #2.

Fall River formation (in part)  Thickness in feet

25. Sandstone, fine to medium grained, tabular, bedding surfaces ripple-marked. Re-impregnated, weathers dark brown.  2.0

24. Obscured, some dark gray silty shale in exposed patches on slope.  9.0

23. Sandstone, fine-grained, massive. Chiefly a single, buff-weathering bed, with 1.0 foot bed at base and upper 2.0 feet platy to thin bedded.  6.8

22. Sandstone, interbedded with siltstone. Fine-grained, cross-laminated, brown-weathering sandstone in beds 1.0 to 1.6 feet thick, with some vertical "worm" borings. Siltstone vaguely laminated, locally "worm"-worked, weathers gray with local yellow to rusty stain.  6.5
Morrison formation.

6. Claystone, locally silty, noncalcareous. Chiefly brownish gray, dark gray, and red brown with scattered carbonaceous flecks. 35'

5. Marlstone, locally silty, variegated gray green and red with thin interbeds fine-grained to aphanitic gray limestone and zones of limestone nodules. Dinosaur bone fragments occur up to 43' above base. Weathers pastel shades of red and green. 75'

4. Limestone, massive, weathers gray-white. 1.0'

Total thickness Morrison 111.0'
Sundance formation; Redwater shale member

3. Shale, gray calcareous. 1.0'

2. Sandstone, medium to fine grained, weathers yellow, calcareous. Locally a sandy limestone. Has thin interbeds of gray shale and irregular beds of gypsum. Locally masses of gypsum 1' to 2' thick in upper part. 11.0'

1. Shale, gray, calcareous, fissile. 2.0'
Aladdin section

Fall River formation (in part)

49. Sandstone, fine to medium grained massive, cross-laminated, weathers yellow gray to orange-brown.

48. Sandstone, fine to medium grained, thin bedded laminated, weathers light gray with local yellow to orange-brown stain. Forms shelving ledge.

47. Obscured slope, float of platy laminated sandstone.

46. Sandstone, fine-grained, massive, laminated to cross-laminated; weathers light yellow gray to brown.

45. Obscured slope.

44. Sandstone, fine to medium grained, tabular, cross-laminated, "worm"-marked and ripple-marked bedding surfaces. Some vertical borings. Weathers buff to brown.
43. Shale, silty, gray to dark gray, with carbonaceous fragments. 4.6'

disconformity

Lakota formation

42. Siltstone and silty claystone, light gray to white. 0.5'

41. Claystone, silty, some clayey siltstone, massive, white, mottled yellow and orange. 2'

40. Obscured by slump and slope wash on non-resistant beds. 44'

39. Sandstone, medium-grained. Variable zone with channel-fills of massive, cross-laminated brown-weathering sandstone irregularly inter-bedded with friable cross-bedded sandstone as in below. 21.5'
38. Sandstone, medium-grained, thinly cross-bedded locally friable, with silty zones. Weathers gray-white with Fe-impregnated layers contributing pink to red staining. Local lenses of thick-bedded sandstone. 20.4'

37. Sandstone, medium-grained, massive, cross-laminated, brown-weathering. Some scattered sandy claystone pellets in lower part. 15'

36. Sandstone, fine-grained, and siltstone, shaly soft, with some thin Fe-impregnated layers. Weathers white with pink stain. 5.3'

35. Sandstone, medium-grained, massive, cross-laminated, lenticular, weathers buff to brown with pink cast. 5'

34. Obscured, float of gray-white shaly siltstone. 2.5'

33. Sandstone, medium-grained, locally conglomerate, massive, cross-laminated. Thin layers and scattered granules and pebbles chert & Qtz. Few lenses intraformational siltstone & ss. fragments & pebbles. Weathers buff to brown; locally has Fe-impregnated upper surfaces. 13'
26. Shale, silty, dark gray to dark brownish gray, weathers gray to purplish gray. Contains plant fragments locally concentrated to form layers of lignitic shale. 4'

25. Coal, and shaly lignite. Upper 1' chiefly soft black coal, lower 1.5' chiefly lignite with shale partings. 2.5'

24. Shale, becoming sandy at base, dark brownish gray, many plant fragments. 1.5'

23. Shale, sandy, grading downward to shaly ss. with thin shale interbeds. Gray to brownish gray, plant fragments. Fern foliage. 1.8'

22. Sandstone, medium-grained, upper 1' clean, becoming carbonaceous and shaly downward. 5.5'

21. Shale, silty, plastic, dark gray, weathers with blocky fracture. 2.5'

20. Coal, lignitic. 1.1'
19. Claystone and blocky shale, hard. Lignitic, beneath coal, grading downward to dark gray. 3'

18. Sandstone, fine-grained, gray, friable. 0.4'

17. Shale, silty, blocky, dark gray. 1.1'

16. Sandstone, fine-grained, some siltstone, massive, friable, weathers gray. 2.6'

15. Shale, as in above, becoming lignitic at base. 1'

14. Lignite. 2'

13. Sandstone, fine-grained, massive, some siltstone, weathers light gray with yellow and brown stain on joint faces. 2.8'

12. Shale, silty, blocky, dark gray. 2.8'

11. Siltstone, locally sandy, lignitic. 1'
10. Shale, blocky, dark gray, carbonaceous fragments. Locally a claystone. 10'

9. Shale, silty, with .3' clayey siltstone at base, weathers gray. 1.6'

8. Shale, as in above. 1.3'

7. Claystone, silty to sandy, tough, lignitic, brown. 2.4'

6. Sandstone, fine-grained, massive, weathers yellow-gray. Some laminae of lignitic, gypsiferous silty shale and sandstone in basal .2' 1'

Total thickness Lakota (rounded) 223'
Morrison formation

5. Claystone, greenish gray, gypsiferous at base. 2.8'

4. Marlstone, dark greenish gray with zones scattered limestone nodules, and thin irregular beds limestone. 13'

3. Obscured by slope wash. Small patches green marlstone exposed and limestone fragments in float. 15'

Total thickness beds included in Morrison Sundance formation; Redwater shale member 31'

2. Sandstone, fine to medium grained, thin bedded and laminated; contains zones of gray fissile, shale as laminae and thin beds. Grades to unit below, weathers yellow. 11'

1. Shale, fissile, gray, with laminae of silt. Wash covered gulley bottom. 5'–?
Fall River formation.

20. Siltstone and silty shale, minor fine-grained sandstone; thinly and irregularly interbedded; partings gray fissile shale. Uppermost silty beds Fe-stained. 2.0’

19. Sandstone, fine-grained, thin- to thick-bedded, local ripple-marked and "worm"-tracked surfaces, buff- to brown-weathering. Upper 5 feet thinly bedded, locally cross-bedded, lower part with more massive beds. Upstream from powerhouse whole unit thin-bedded. 19.5’

18. Siltstone, light gray, in thin, laminated beds, with black shale partings. Some irregular interbeds of fine-grained sandstone. Weathers gray with red and yellow stain. Unit becomes more sandy laterally. 6.0’

17. Sandstone, fine-grained, even-bedded to cross-bedded, cross-laminated, some silty shale partings; weathers buff to brown, some iron impregnation at top and local red stain on bedding surfaces. Base includes coarse sandstone and some clay pellets. 26.0’
16. Claystone, increasingly silty downward, light gray, some pink mottling. Coloring varies laterally; locally a black band in center of bed with yellow stained claystone below containing weathered ferruginous spherulites.

15. Siltstone, carbonaceous, sandy.


13. Sandstone, fine-grained, even-bedded, massive to laminated, weathers brown with local ferruginous stain.

12. Siltstone, gray, with 1 foot silty sandstone in middle part; locally argillaceous in upper part which is stained pink and purple; ferruginous specks (weathered spherulites?)

11. Sandstone, even-bedded to thinly bedded, micaceous, brown-weathering with some rusty stain on bedding surfaces.

10. Shale, silty, gray to brownish gray, thinly interbedded with sandstone. Upper half dominantly sandy; lower half shaly.
9. Lignite, with local lenses hard, carbonaceous siltstone and sandstone up to 0.4 foot at base.  

8. Claystone, silty, grading down to clayey siltstone. Upper part gray with long plant rootlets extending to middle of bed, becomes red in middle part gray again in basal silty part.

7. Sandstone, fine- to medium-grained, massive, brown-weathering; basal foot some shaly sandstone interbeds. (Evan's Quarry sandstone.)

6. Siltstone, sandy, hard locally platy; contains plant fragments and some claystone fragments. Weathers with brown and purple stain. Locally grades laterally to fine-grained sandstone.

5. Siltstone, massive, hard, subconchoidal fracture, gray; grades downward and laterally into rock type of unit 4.

4. Siltstone, irregularly laminated with fine-grained sandstone, massive, fractures in big subconchoidal blocks, gray, contains plant fragments.
3. Claystone, silty, becoming shaly, black; some irregular interbeds clayey siltstone. Grades to unit 4 above, becomes sandy at base.  

5.5'  

Lakota formation (in part)

2. Sandstone, fine- to coarse-grained, with some conglomeratic beds; massive, cross-bedded, weathers reddish brown. Upper 1.0 to 1.5 feet is capping interval with sandstone at top, a middle layer of light gray gritty claystone and a basal 1 foot layer of red ferruginous, locally conglomeratic sandstone.  

24.4'  

1. Claystone, slightly silty, gray, subconoidal fracture.  

0.4 - ?  

Obscured by slope wash.  

Total thickness of Fall River (rounded) = 164 feet  

Supplemental section showing details of the Lakota contact about 200 feet southeast of the old quarry gulley locality.  

Descending  

Thickness in feet.  

E. Dark gray clayey to shaley siltstone equivalent to unit 3 of preceding section.  

1.5 - ?
D. Sandstone, silty, ferruginous red, similar to and apparently continuous with ferruginous layer near top unit 2 of preceding section. 0.4'

C. Claystone, light gray, mottled pink and purple, becoming more silty downward, with ferruginous specks from weathered spherulites. 1.0+

B. Siltstone, purple, with weathered ferruginous spherulites, grading to unit below. 1.5'

A. Sandstone, fine- to coarse-grained and conglomeratic as in unit 2 of preceding section. 1.0 - ?

Obscured by wash.

Laterally, toward the old quarry gulley, the spherulitic claystone and siltstone beneath the ferruginous layer (unit D above) grade into sandstone. The Fall River-Lakota contact could be placed either above or below unit D. This ferruginous layer and its equivalent in the preceding section, the ferruginous layer and beds above it in unit 2, may represent a reworked zone at the contact.
Buck Canyon sw/4 sec. 15, t8s, r4e

Lakota formation (in part)

24. Sandstone, light yellowish gray, very fine grained, parallel bedding, forms massive cliff.

23. Claystone, medium gray, fissile at base becoming more massive with hackly fracture at top.

22. Sandstone, gray mottled red, very fine grained to silt, irregular bedding.

21. Claystone and silt; claystone medium gray to brownish gray, unctuous, silt mottled purplish gray, massive.

20. Sandstone, orange gray to yellowish gray, very fine grained, massive.

19. Siltstone, gray to purplish gray, thin bedded, carbonaceous.
18. Mudstone, greenish gray, some very silty, carbonaceous.

17. Siltstone and sandstone, silt brown, ss. light yellowish gray, very fine grained, silt carbonaceous, ss. iron stained.

16. Mudstone, olive gray and brownish gray, upper 7' contains ostracodes; lower 17' alternating olive gray mudstone with brownish gray mudstone containing large carbon frag.; some thin calcareous ss., some gyp and pyrite. 37'

15. Sandstone, yellowish gray, fine grained calcareous, abundant interstitial clay, iron stain, carb. material, gyp.; contains ostracodes.

14. Mudstone, olive to brownish gray, finely disseminated carb. material, upper 2' contains ostracodes.

12. Sandstone, yellowish gray, fine to very fine
grained, calcareous, abundant green-gray
interstitial clay, abundant carb. material.  4'

11. Claystone, brownish gray, silty, hackly
fracture, contains ostracodes.  1'

10. Mudstone, brownish gray, silty, bedding
irregular, contains ostracodes.
More resistant to weathering than unit above.  3'

9. Mudstone, olive gray, calcareous, hackly
fracture, contains ostracodes.  8'

8. Siltstone, white, in beds about 1' thick,
upper 1½' ss., very fine grained, calc.,
forms prominent ledge.  9'

7. Siltstone, dark brown and dark gray, some
gyp and jarosite, contains ostracodes.  5'

5. Sandstone, yellowish gray, very fine grained, abundant interstitial material.


3. Sandstone and mudstone, interbedded, ss. yellowish gray very fine grained; mudstone olive gray, silty, ss. forms thin ledges.

2. Mudstone, dark brownish gray, sandy, abundant carb. material, contains ostracodes.

1. Mudstone, olive gray, minor amounts silt, hackly fracture, unctious.
Morrison formation

1. Mudstone marl, mudstone greenish gray, marl pale light gray, mudstone contains very fine sand grains; marl as discontinuous beds up to 3' thick.

Unkpapa sandstone (in part)

1. Sandstone, white to pale light gray, very fine grained to silt, cross-bedded, friable.
Indian Head Rd. W. of bridge over Piscataway Cr.

channel sample around bend from road cut.
sample below and through lower shell bed.
DATE
Aug 11, 1964 p. 1

NAME
U.S. Government Printing Office
16-37601-1

picturc S. Gordon Puc 114 C 113 1850 SEF

85°
LS N 55° E 60° W

8-11-1
disc none found in lab.
Bear Trap Hollow section, Smith Troublesome Canyon 30' below Keen Brackenhead. Bed 0. Sediment and ostracods. 45.5. Sh. 4.1. Sequence 4. Mississippi Ostracoda from Sedlich bed 249. 3.7.

8/19/1 25 w. 0.2

8/19/2 Sh. above 8/19/1

S.E. 3/4 N. 1/4 T.1 S. R.7 E. S.1 Base 2.04

S.E. 3/4 N. 1/4 T.1 S. R.7 E.
8/17/54  Shale before us. Work cables at station 22 of Drysdale section of Logan district.
B. N 23 W 114 E
N 2 W 29 E
N 32 W 79 E
N 25 W 162 E

Aug. 17, 1956
Bennett J. B.Y.U. Bore, Utah
worked with Hunt, prepared locality samples. Hunt's
agent, Bonneville & Bore
met him on outcrop in
Dry Lake section (out of lognotes).
NAME

ALFDCT BARCH  D, see GORDON

DATE

Aug 12, 1934

8/12/2 shale 80' above L5. Great Blue jett. about 20' wide coll near top and includes zones LS

8/12/2 LS. just above sh. bare face. slab

8/12/3 face to within 5' 7" 8/12/4 No Ostr. Discrd

8/12/4 LS. with silic. 0/0.00

see Gordon c.r. EP. pick out slab 7 8/12/3 frozen bag.
down by 10 above G1210
? Equivalent to Foot Ranch or
Diamond Lesle Eger

9/15/47
Shale with micropores
below 3rd rib
Wall down exxels from
road to N - 1040.
Aug 10, 1934

8/10/34 Burbank hill's whole slope near road. Gordon's call 54-113.
Chairman's sh. 10/25.
Stake, calcareous above
Geo. Gordon, Shell Co.
Stake 529, 7 Miss., (U.)
Gordon call, 1954 no. 105
Welsh of Shell Co.

Jim Osborne, Deseret
News Bldg., Shell Co.
Crest Microfilm, Foreman

22-0471

33 Richard St.

2nd floor Peteo La.
8/6/1

slabby L.S. for etching
same as Gordon 1937 96
Elliph 9 Center Line
NE 4 Sec 36 T. 18 N R. 57 6 E.
White Pine Co. Year
75½ W of right way monument
N 3 US 50.

3/6/1 in to base 3.

This collection is at
base of White Pine (Chairman shale?)
Jordan River Bridge

7/30/4
N. cross road W of Bridge on E side 7 road 6 ft from intersection stop sign.

7/30/4
Provo? cut road-level, 402

7/30/5
Alpine? on W side 7 bridge abutment about 21 above water level

7/30/5
USNM
LOC 39819
George McDaniels farm

Alpine utah rd to George McDaniels farm which is probably second rd S. of it in Alpine that leads E. near E end of town. Top of hill road lead down to E and fork. 5/4 sec 19 T 4 S R 2 E. S. side of rd has cut through cell. Make NE of rd. right above ditch. Below and between 1st N & S ALPINE on Hunt's map.

Alpine in 1990' picture 29.

7/30/1

7/30/2

Alpine on hill road. NE 1/4 SE 1/4 NW 1/4 sec 35 T 4 S R 1 E in field. Left gate on rd. crossing hill when headed S.

7/30/3

1/2 mi S due E 1/2 center 5 2-7 T 4 S R 1 E. Loc. G 7495-0. In 2' hole in field. On crest of plowed field. Alpine.
Ogden Bay bird refuge
pictures of birds on extreme
south of dike no. 1
pictures of mirage

7/29/3
USNM Loc 39820

7 1/2' - 4' below surface
of mud flat

7/29/4
USNM Loc 39821

7 2' - 4' below surface
of mud flat

much of hot spring
W of Hedges Hot Spring

one picture of dike
with water on top
increase on left prob. #20
Horsethief City

sec. 20, T5 N, R1 W
lot. on ridge E of field
and E. U.P. RR which is
E base 7 A. and bounded
by weller Rville on other
2dsides 250 to 300
S 10 W to water Tower 7
Ogles armed 25, 7860
from limit "U" on Washcliffs
"U" is immediately N of Amherst
Canyon just visible over
intermediate ridges near it
NW of Bill J. Amphitheater formed by
clumps gray mant with small
above proofs sand and salt
piles
10 Amphitheater from April
lot. on L. side
film 7 x 8  Ogden Canyon  Z in  Brazer Sh. No. 1000 Yarrow

Morgan Valley 2.7 mi. up Cottonwood Canyon road  N. from Highway 30 S. of bridge draw 1/2 left of rd. Norwood Tuff?

1/2 mile SW 7-28-1 Alpine? Alt. SE side 7 rd. 6"+ clay in sand near top of hill  Felt 8 sample — mile up Cottonwood Canyon.


July 28, 1954
Alpine near Junction of Harrison Blvd # US 89-91
May be Alpine
USNM Loc 39817
u.s. 89-91, 300 yds N.E. 7
Utah, Hot springs alt. 6,440'-
4,450', NW slope hill
above rd. cut. Exit way
7/26/56
Calcereous tuff on Agile
has extrachalceous age?
Candona sp. age undei.
Ogden

Weber Co. Gravel pit off 4800
Pleasant View Rd. 500 W.
Go N. on Washington Blvd. to
N. Ogden Town S. N. Ogden bear
W. on Old HWY 89 & junction
with Alberta Drive entering
town at V angle from East.
Turn E. for Alberta Drive
about 1/2 mile to 500 West
Street, turn N. on 500 W.
Continue 1/2 mile to gravel pit.

Gravel 6' below Tany
Provo silt and sand.
Site altitude is classic Provo.
Ecologically - about 20' below
Provo lake level.

Sand and clay, 18' above base.
1/4 to 1/2 mile away from shore.
NAME: Galvanda

DATE: 8-1

0225.70 Piosp. A

Shenandoah SW/4

Galvanda limestone and shale in road cut near Douglas school
Hardin Co.

11 S & E sec. 25

2' shale beneath S.S.

"very top of Galvanda"

12' sh. 025 below.
0428.75  P51B

Kinkaid limestone, coal, foraminifera
shale, and sandstone in draw
3/4 mile southeast of Glendale
Pope Co.
05/20/76

65A
Kinkaid fissileferous yellow shale with white calcareous nodules in road ½ mile south of Reach School, Johnson Co.
Kinkaid limestone and shale in ravine 1 mile northwest of Bloomfield, Johnson Co.
Kirkland fossiliferous gray clay, shale along road 1/2 mile east of Bloomfield, Johnson Co.
Kirkland formation presumably in SW 1/4 sec. 35 about 2 miles southeast of Bloomfield, Johnson Co.
Golconda shale, light gray, fossiliferous, NE 1/4 sec. 16 T. 12 S., R. 7 E., Hardin Co.
Clore formation along road and Whiteside Branch of Hays Cr. 4 miles east and ½ mile N. of Glendale, Pope Co.
Cooper 10
Union Co. Carbondale □
West Bluff Creek
SE SW 26 T11S, R-1W
See Bull 48 p. 47
<table>
<thead>
<tr>
<th>NAME</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kinkaid</td>
<td></td>
</tr>
</tbody>
</table>

Cooper Pz 5  Brownfield 7
June 1938  P3  Stop 10
= Kinkaid 1
Cooper 3 = Kincaid 4

Vienna □ N 1/2

Shale, fossiliferous, yellow, brittle, with white calcareous nodules. Sample in road, formerly the "Marion Rd."
NAME  Paint Co.

DATE

cooper 2 (Miss)

Baldwin

Poison

clink"a"n

massive 6.5 in. falls

bed 32

— road
Go S of Tnf for 1 mile. 2
2
S2
2
5
3
10, 28

for Cooper's Nursery, equal depth.

Go E on 75. S

5
3
10, 28

for Cooper's Nursery, equal depth.
Weaver's Paint Creek

Locality 7 1352.5

Floraville, on

Waterloo

School 2 mi W of Floraville

outcrop 1/2 mi E

3/4 mi school.
G. Sue. Kentuck. Chester
Field Excursion. Apr. 1952
G (238)
G 2941
1952
Southern Indiana &
Western Ky. Chester

New Harmony Indiana
Sampson Pennsylvania
The Workingman's Inst.
Rock Creek Mining Co and Frayley's Hole No. 7

5/20/1  Top 7 Downish Bluff
Sh. 6 or base 7 Better

5/20/2  343'-345' Shale 1st. Shale
in Top of Shefferville
beneath Top Dolomite unit
Cooper 11.
Shawnee Town [ ]
65 Bullo 41 p. 1941
June 1938 Stop 9
slope covered [ ]
by Glen Dean [ ]
5/19/11
Shale below [ ]
Ls. Lodge
= approx Cooper 11

5/19/12
Clay between Ls. just above
5/18/11 Ls. has pyrite pores
and pyramids. = Glen Dean
G-1 lot.
Shawneetown
Go N. from Cave in rock turn
left 1 1/2 rd. after creek
bear left ti. abandoned house
and gate. Walk down rd.
Ls. ledge 5' + (same as 2nd ledge
of Freyley's 5/30)
Shale nearest 20' +

5/19/4
Wood stv.
disc.

5/19/4
Shale 15' + before 5/19/8

5/19/10
Clay in Ls. above 5/19/8
= 5/19/4 strat.
NAME
Philadelphia School House
old road due N. on W side of cr.

DATE
May 19, 1954

5/19/2
weathered charity bs. possibly
S.S.
covered slightly at bottom

5/19/3
sh. in dumpy shaft probably
C-2? may be some talc or
NAME: Clore

DATE: 0311.73

P15 Spd: Equality 1.514

clore shale, gray, sandy and
turbidicous near bottom
exposed in road cut south of
Codex Store, 700 feet north
of Philadelphia School
Harbor Co.

carbonate deposition
needleted 0.5-
calcareous
Ls, shaly in slump
Ls, hard bedded d k
Ss, mostly compact
Sb, gray, fracture gray
sandy at bottom
food left at bottom 8'0
NAME  Golconda  DATE  G-6

0324.04  P15 Sp/C  Equibility

Golconda formation in road cut 1/4 miles northeast of Groza, Hardin Co.
Shaly 15. with thin shale layers.

Not recoverable
May 19, 1954.
Golconda formation exposed where Brushy Fork cuts west Bank just 0 north of center sec. 14 2 miles NW of Hicks, Hardin Co.

04/14/56 P 26 I Equally 0 0.1

Golconda 20' above top 7 Barlow (branch Golconda)

Loc. down rd. just before ford in Cr. — 8 1/2 mi. from Res. ridge

5/19/11
NAME

U. S. GOVERNMENT PRINTING OFFICE 18—87601−1

DATE

Mary 18, 1954 p. 7

9, 10, 11

feb. 8, 9, 10, Kreekair & Quarry

Green sh. on Top

Kreekair & Quarry on Map.

5/18/19 For. shaly line 4'±

above massive lc.

which is quarried

probably Kreekair

5/18/20 For. shaly and lc.

complete around

5/18/19 U. Kreekair
Kinkaid

DATE
May 13, 54 KI  p. 6

0419.50 P55 (4/2) Brownfield □ NE co.
Kinkaid 1s. and sh. in RR cut 3 miles E of Simpson, Pope Co.

"Not Kinkaid
Top of sec. is under bridge
sec. goes S.

5/18/16
USGS 12840

100' of signal sur
Use bridge when top
power line crosses cut.
E side of cut bed 7' Cooper

In June 1938 stop 10
5-18-17

5/19/17
12841

12' shale below 7'
15' sh. or between
signal & power line 7'
# Cooper #5

p.c.U. clone

5-18-17 1/2
NAME: Messard

DATE: May 18, 1954

Cooper 15 = 0701.55
Brownfield 1105.75
Stop 11 June 1938

5/18/13
Cooper bed 1 5'1' shale above 2'10.5' B.L. above 13'13'
7'40' B.R. Curve
5/18/14
2' shale = Cooper 15
B.L. before and 13' legs above 2'10.5' Sandier above and brown

5/18/15
B.L. 15' before 5'15'
B.L. above Cooper 15
5/18/7 5h. above 65, which is 4°4' 

by Galeonde

5/18/8 7h. above 65. which is 9°4'

shale immediately above Barl. Gote. 

(Breccia) 1st. limest. shale. 

or shaley 65. (L. Galeonde) 

very free with 

testocrinus capitatus 

Pentacrinus, breachi.

Galeonde go straight 

rt at First Baptist Church 

sight continue sharp rt 

then rd down to RR Track
Brownfield Formation in old quarry west of RR tracks in SE 1/4 sec. 26, T.13N, R.1E, 3 1/2 miles SE 7 Walsenburg, Pueblo Co.

3 tests proven

"Middle Golconda" 30 ft.

"Middle 1 just below the middle of Golconda, the *Nodosaurus capitis* zone"

Collect the shale samples, check sample in Chicago.
Top y bluff ss. Shrimph

5-18-4
Goleconda Ls. 2' Elms. from base, near Top y Goleconda, shrimph ss. on Top

5-18-5
clay and mud above
5-18-4 Top sh. 2
Goleconda

5-18-6
shale below Ls. 20' + below hard, ss. 200' + N E.
a little lower than 5-18-5
0.705.90. Golconda formation presumably in bluff west bank of Buck Creek 2 miles north of Wallerburg Pope Co.

This is steep gully down the bank of the Ohio Riv. 5/8 mi. E of Rock Quarry School which is 3 2/3 mi. N of Golconda.

Shale in 107' section.

Top 3 sec, would = G-1
lower 2/3 9 sec, = G-2

Hardinsburg 55. Top 7 sec.

Stop 18 June 1938
Renaudet 0905.521
probably M. Renaudet
or Shetlerville

5/18/1
12844

5/18/2

5/18/3 for Brown Quarry in St. Genevieve

sheet Shetlerville Quar
parkinson quarry at Shetlerville

Circ. 144 p 130 f. 7.
Rosiclair ls near Top.
stone Co.

sample of Agric. lime and
chimney M. St. Gem. or 2 1/2 ft
Frederica
NAME: Renaux
DATE: 090520

Golconde
Hardin Co.

down
LS prof. 20 feet exposed 5-0
4 NW grey t.s.
Shaly toward the base
Sh. grey fossil
2

LS. med. grey brown
Shaly unevenly laminated
more fossil
Sh. grey calc. fossil 1" 6"
soft

Circums. 144 p. 130-131
Top of fig. 8
also stop 5 June 1938
NAME

DATE

MAY 16, 1954

Old Cleveland Quarry
Monroe (?) Co., Indiana.
Guide book stop 6

N end of quarry on Top
Salem Ls., weathered

Type for. 7 Geo.

Abdullah Sayyah

Phot. 4 ½ 0 f. 35
Stop 12 - call. 7 Pico for. Phot 19
across rd from call
500 shallow water. x bedded

Stop uninc. Map 7 or Pico Canyon
rd. Middle Pico -
beds a little higher than
10 30
stop 12
grated. beds. grade into x bedded. 15 M.M.
loc in oil field.

10-30-3
Cliff near Dodge 10-30-2

Jerry Winterer. UCLA
for Ruy. & for Jim Valentine.

Stop 14
10-30-4
near sage Pico for
10-30-5 clay & sand across bridge
10-30-6 clay 10-30-5
deep water

10-30-7 sand 10-30-5
reworked & shallow water

Stop 16 10-30-91. Skep rd out
p. 141 San Miguel Oilfield
Pica fm. opposite Bluffs
deep sea.

10-31-2 Shell Hartman Ranch 4444
M. Pica fm. cut S of Well
on Ventura Field forams
approx same as Turbidite
current Aug 4 10/30
600'-1200+' deep

candidula echinata zone
epistrophella pacifica (?)
| LOCALITY:  | Brown Co., Texas |
| Collector: | R. T. Terriers |
| Date:      | MAR. 11-1955   |
| Memoranda: | Megafauna list |
| Field:     | Adams Branch 15 |
| No.:       | 1083           |
| Name:      | In charge.     |
| Determined:| member of Bradford |

**United States Department of the Interior—GEOLOGICAL SURVEY**

**SURVEY OF THE**

Penn of Texas

**Collector:** R. T. Terriers  
**Date:** MAR. 11-1955  
**Memoranda:** Megafauna list  
**Notebook:**  
**Page:**
<table>
<thead>
<tr>
<th>No.</th>
<th>S/1856</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Field:</td>
</tr>
<tr>
<td></td>
<td>Determined:</td>
</tr>
<tr>
<td>LOCALITY:</td>
<td>Golconda 54</td>
</tr>
<tr>
<td></td>
<td>Upper 1/2</td>
</tr>
<tr>
<td>Collector:</td>
<td>Date: May 18, 1954</td>
</tr>
<tr>
<td>Notebook:</td>
<td>Page: 2</td>
</tr>
<tr>
<td>Memoranda:</td>
<td></td>
</tr>
</tbody>
</table>

United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE

In charge.
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Field:</th>
<th>Determined:</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/19/7</td>
<td></td>
<td>Galena Co</td>
<td></td>
</tr>
</tbody>
</table>

**Locality:**
Freyley 15' above base
54. 50' = acme 87/16

**Collector:**

**Date:** May 1954

**Notebook:**

**Page:** 3
United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE

In charge.

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Field</th>
<th>Determined</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/19/4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LOCALITY: Clayton
State: New Mexico
Lat.:

U. Golconda

Collector: Date: May 19, 1954
Notebook: Page: 3
Memoranda:
GEOLOGICAL SURVEY

SURVEY OF THE

Allans Ranch

In charge.

No. 8/12/4

Name Field:

Determined:

LOCALITY: Las with silica

Collector: Gordon

Date: Aug 12, 54

Memoranda:

Notebook:

Page:

6-8233
United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE

In charge.

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>57/18/13</td>
<td>Field: Determined:</td>
</tr>
</tbody>
</table>

LOCALITY: 5' Shale above Cooper 15

Memoranda: Memoral = Cooper bed

Collector: 

Date: May 18, 1957

Memoranda:

Notebook: Page: 5
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Field</th>
<th>Determined:</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/10/54</td>
<td></td>
<td>chimneymank shale</td>
<td></td>
</tr>
</tbody>
</table>

**Locality:** Burbank hills, shale

Gordon calf

<table>
<thead>
<tr>
<th>Collector</th>
<th>Date</th>
<th>Memoranda:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2350 lbm</td>
<td>Aug 19, 1954</td>
<td></td>
</tr>
</tbody>
</table>

Notebook: Page:
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Field:</th>
<th>Determined:</th>
<th>Locality:</th>
</tr>
</thead>
<tbody>
<tr>
<td>71</td>
<td>L. L. Wood</td>
<td>called Kurtz siding</td>
<td>1907</td>
<td>5th. below 71' 60° 5'</td>
</tr>
</tbody>
</table>

Collector: | Date: | Memoranda: |
------------|-------|------------|
            | May 18, 1954 | Notebook: |
            |       | Page: 6    |
United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE

In charge.

No. | Name | Field | Determined |
--- | --- | --- | --- |
57911 | | |

LOCALITY: 5th below CS = approx. Cooper 11

Collector: Date: May 1954 Memoranda:
Notebook: Page: 5

6 PO 16-20967
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Field:</th>
<th>Determined:</th>
</tr>
</thead>
<tbody>
<tr>
<td>818/3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Locality:**

812/4

Collector: | Date: Aug 12, 1957 | Memoranda: |
---|-------------------|------------|
Notebook: | Page: 1 |           |