

4
July 7, 1961

- stop 1 loc. 117 of Berryhill, Wash. W \square , Wash. Co., Penna. 0.43 mi SW of Sewage Disposal ~~plant~~ secondary rd. E of Hwy 18 or Henderson Ave.
- 7/7/1 Little Captins ls. member, S side of rd.
- 7/7/2 Ellis, coll. Uniontown ls.
- stop 2 Ellis 7/7/3 loc. 162 on E, side Hwy 18 E of Jordan's Run NW Central/Wash & West \square , Penna.
- stop 3 W side Co. Rd. 30024, at 0.55 miles NW of Int. with Co. Rd 30011 at Schwartz's, Church on corner Quarry.
- 7/7/4/61 Top of uppermost ls in U. Wash. member, also plant found.
- 7/7/5/61 Top of lower ls at quarry level below 7/7/4
- stop 4 County Route 30063, 2 $\frac{1}{2}$ (2.5) mi NE of Nineveh near high pt where road crosses Ridge. below X rd. El. 1307' \pm el. (1317 at X rd.)
- 7/7/6 Nineveh?? type about same el. as chert from Tractor.

NAME

DATE 5-20-60
Bachman & Solms

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

Section F of King's oil & gas
map 36

Pictures of dead animals on fence
and their view of Penn. ls of well
5-20-1, 2 & Helms 5-20-3

The Dev. 5-20-4 was 1/2 ± up
slope of slope of hill to rt.

Lea Adwell - Lazy 2 Ranch
1/2 mi. Hwy

5-20-1
Ostr.

Penn. L. Massive bed
little bay 4' ± below
big brags (5-20-2) is more silicified
on surface than 5-20-2

5-20-2
Ostr.

Massive ls. 4' ± above 5-20-1

5-20-3
Snail, fish
No Ostr.

Helms shale 12' ± below
Massive Penn. of 5-20-1

5-20-4
Poor Ostr.

Dev. 1/2 ± way up hill
fossils on surface.

5-20-5

Poor Ostr.

Type Hueco
Basal Massive unit N. side
US Hwy ± 2 mi E of Hueco Inn
Powwow Canyon

NAME Sohn, Backman & Myers DATE 5-21-60

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

p. 1

see West Junction 298.7
Texas G. Soc. Guidebook 1960 Geol. Delaware Basin

300.5 Rd cut Bone Springs - dark (black)
fracturing ls. - smells when hit
with hammer - not promising
305.6 Turn off on South rd.

5-21-1 Getaway ls. loaded with
osteol. fossils, some brachiopods - for etc.
1/2 up the fm. (near middle)

5-21-2 Getaway ls. - about 6' below
5-21-1 (2 collections are
the above) from Guadalupe Summit
beacon flat area just before
rd climbs to beacon.
Cullbertson Co. 1st Pict. of El Capitan
from here also one from road
beacon 1st exp 150 f 16
2nd " " f 516

310.8 back to Hwy Texaco (Nickel Grill Motel)
319.7 Post service station rd cut.

5-21-3 0.8" E 104°45' & 0.9" N 73°55' King's Pt. 3 W side Hwy
Poor form Monzonite member Cherry Canyon

5-21-4 2' above 5-21-3 ls. below
Nothing Discarded between Ash beds

5-21-5 Ash 6' ± above 5-21-4

Poor form USNM Loc 39745, see IER SR-61-3

NAME

DATE May 21, 1960

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

P2

5-21-6
eponge

0.4 mile N on Hwy
Hayes fm. thin platy ls. with
shale bedding. picture of stag horn
in bloom seen on outcrop

320.1

N of outcrop

322.7 m

Lamar U. Farm Top of Sec.

5-21-7

ost. part
D. m. s.

Clay between platy dark
varved ls. picture of cut
with Escapitan in background
coll on S. side of cut.

Turn around & go towards El Paso.

323.9

First rd. to right (SW. rd.)
make it at rd. 1 mile ENE
of Pratt house SE of landing strip.
isolated hill with O_2 in SP 29 + p. 930

5-21-8
Conodonts
No Ost.

Top of Hill, Lamar fm. ^{Back Hill}
Same as 5-21-7 but nearer
to the reef.
Silk, ls. 1. 2 bags some for Herd

5-21-9

return
Conodonts

Picture acotilla picture on outcrop
McConchs fm. rd. back from
Pratt's place above creek. Best layers
30.4 at main Hwy reads 32.0
ls. weathers brown sil. fossils
has Polydiexodius - lg. fusuline.
1.6 miles on Pratt's Rd. from Hwy US 62

Kings map - Hwy moved ^{Ranch}
N Hwy G.S. - 546 Field Crp p. 57 etc

NAME

DATE

May 24, 1960

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

Leave Alamogordo for Las Cruces.
Ship 206 lbs. of rocks.
Roll 2 white sands, then organ
hits.

5-24-1

2 nd roll.

flowers & hotel

NAME

DATE May 26, 1960

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

Las Cruces, N.M.

5-26-1

Hueco, on Top of spur.
silicified, ls.

USNM Loc 39751

5-26-2

Ls. 6'± below 5-26-1

these 2 are above Abo Tongue

SNHILS

USNM Loc 39752

5-26-3

Soft ls. & sh. below ls. ledge
and between ls beds, just
below Abo Tongue, this
sample may be contaminated

USNM Loc 39753

5-26-4

Shale on slope below 5-26-3

USNM Loc 39754

5-26-5

shale, 75'± below Abo tongue

see above on Las Cruces □
Robledo Mts. SW 1/4 sec. 19, T. 22S, R. 1E.
Dona Ana Co., N. Mexico

5-26-6

Ls. across section about 60'
horiz. & 10'± strat. Pennsylvanian

5-26-7

Helm's shale in Prospect pit.
two chunks of quartzite ls to
etch. about 25' below top

5-26-8

Helm's ls. above shale 5-26-7 etched
pieces for etching 2 layers

see above 3 from NE cor. SE 1/4 SW 1/4 sec. 25 T. 24S R. 3E
La Mesa □, N. Mexico

NAME

~~XXXXXXXXXXXXXXXXXXXX~~

DATE

7-13-59 p. 2

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

Deer Creek Section in
Indian Hills

7-13-5

Ralston Creek fm. ± 8
below basal Morrison ss.
just above ~~the~~ Marl 2' a
2' \pm marlstone or ls with
chert. Variegated claystone

7-13-6

Morrison, above basal ss.
15' \pm from top \neq 3' \pm below
2nd cliff making x bedded
ss. massive silty claystone
~~#~~ bed 77 7/13/3

7/13/7

Morrison just below
Dakota ss. 2' channel
thin bedded siltstone
& claystone

NAME

DATE

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

7/14/58 p. 2

US Bureau of Mines
oil sh. Plant

7-14-7

3rd Saddle Elev. 7070'
go down rd about

700' shale with
lenses of ostracodes

about 15' below
massive sand about

500' above Wessac

lower part of ~~Antler~~

Amvil Point fm. #

Douglas Cr. (Top of)

0.8 mile above El.

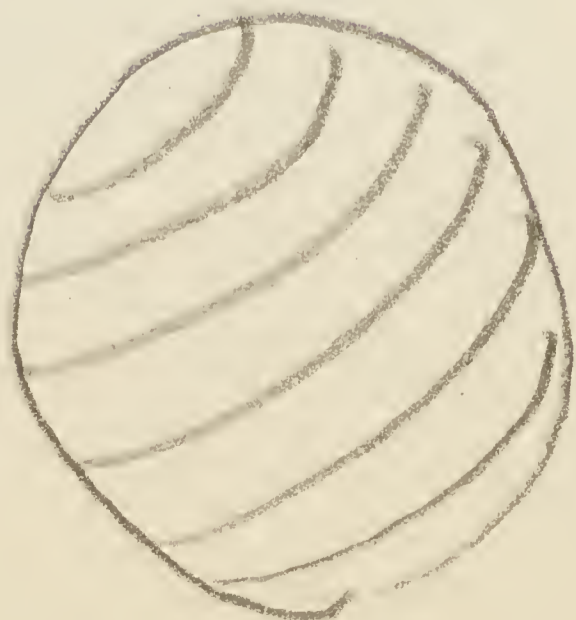
6575 sign up Road.

7-14-8

sh. with ostr. 0.2 mile down

road from 7-14-7

100'-150' above Top of Wessac



NAME

DATE

8/10/57 P. Z
Maple

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

Tilford Rd. loc. ⁸ NW or
near Pleasant valley

8/10/10

- 5'± below contact
Fall Riv. clayey siltstone
in top 7' Dakota. Contact
is hiatus

8/10/11

Basal 1/2' of Fall Riv.
above 8/10/10 just above
spherulites

~~8/10/12~~

~~No 8/10/12 = 8/10/14~~

NAME

DATE

8/14/1957 P. 2

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

8/14/12
USGS 26884

Sh. with Durosom bone
below 45.7 8/14/11
32.2

from 32.2' - 45.0' below ss

8/14/13

Ls. sandy 1 1/2'

8/14/14

Sh. 1.3' from 46.5 - 47.8 below ss
ss = sh break, sand knobly weathering
Not sampled.

8/14/15

Shale base is 39.2' below
ss. (Note error above).
Thickness 10.8'

8/14/16

ss. 1'
sandy sh below 1' ss bed
~~and above~~ 1.2'
40.4' below contact.

8/14/16

ss. 2.5' Not sampled

8/14/17

Pict. 7 Bell roll, 9.
Or gray + lt sh. below ss. 0.9'

Ls. 0.8' not sampled.

8/14/18

Shale getting sandy towards
bottom 49.2' below contact (base)
Thickness 5.4 - .8 = 4.6' thick

NAME Bell & Sohn

DATE Aug. 15, 1957, p. 1

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

Cheyenne River, E. of
Lord's Ranch
Morrison above Sundance and
below Lakota

8/15/1
USGS 26886

Lime zone, highest in
sec. 1 38 1/2' above Sundance
3 sample 8/15/1 and 55' above Riv. bed

8/15/2
USGS 26887

Channel sample mudstone
below 8/15/1 to limy zone
below. 7' ±

8/15/3
USGS 26888

From Top of limy zone at base
of 8/15/2 to Top of lower
limy zone. 6' ±

8/15/4

Morrison 1' interval just
above Sundance.

Black & white
pics 2 & 3 outcrop from
1/3 across Riv. bed
pic 5 Sundance ledge
at base of Tree-closter
than 2 & 3!

NAME

DATE

Aug 15, 1959 ps

Upper Chulson Canyon
Marty's Ranch
Lower part of Lakota +
Buck Canyon section
NW 1/4 of Bear Flount Hill

8/15/9

Mudstone - no ostracodes
seen 30' ± above lowest
sample (questionable)

8/15/10
30990

Mudstone - ostr. seen
20' ± below # 8/15/9

8/15/11
31129

5' ± below 8/15/10
has Isaura, with
paper sh.

8/15/12
3130

Sandy just above 8/15/11 - hard

8/15/13
31237

about 3' below 8/15/11
with

8/15/14
31238

Bottom sample

NAME D. E. Wolcott
C. E. Price

DATE Aug. 16, 1957, P.M.

Peck's loc. D. 286 (p. 11)
NE 1/4 sec 32, T. 7 S, R. 6 E. on sec. 32-29,

8/15/1 Upper 1/2 of lens
USGS MISO 31153

8/16/2 Lower 1/2 of lens to unk paper
USGS MISO 31154

8/16/3 Sh. break 1/2 above lowest
USNM Loc 39945
1/2 of sand which is on
top of Peck's loc. D 286
color pit 9, 10. Walcott on contact
with unk paper.

8/16/4 Evans Quarry NW 1/4 sec. 33, T. 7 S, R. 6 E
Type of Fall Riv. (Lower part)
Mudstone below the Evans
quarry sand, Fall Riv. (lower)

8/16/5 Evans sand chips along
entire face.

8/16/6 Red gray mudstone above
Evans sand - cleanest sample
8" - Red mudstone unit,
carbonate - unit sample

8/16/7 Unit N 70° Walcott SE 1/4 8/16/6
river bed above power house
(upstream)
NE 1/4 sec 33
T 7 S R 6 E

8/16/8 Unit "Q" lower 6" just above
hematite seam

C. Pilmore
NAME Maple

DATE Aug. 19, 1957 p. 1

Cambria Creek section

near Newcastle W 1/2 SE 1/4, sec 20

T45N, R.61W. Maple sec. 6

8/19/1 Fall Riv. unit 13 just above coal

8/19/2 Labots below carb. shale about 100' below base of Fall Riv.

8/19/3 Maple unit 16 - Fall Riv.

Maple loc. 68 b sec 23
T45N R65W. Weston co., Wyo

8/19/4 Morrison 67' ± above Sundance some pbbly lime included with underlying green and brown mudstn

8/19/5 About 15' below 8/19/4
USGS M1250 26898

8/19/6 about 15' below 8/19/5
USGS M1250 26899

8/19/7 about 5' above base, Ostracoda.
The Rio?
USGS M1250 26900

NAME

DATE

8/19/57, p. 41

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

8/19/20

Maple loc. 109 Uptown Sundance Hwy, Fall River, near base maple base 7 unit 2

Maple loc. 41 (south in Lakota)

8/19/21

USGS MISO 26909

Morrison 15' above Sundance

8/19/22

USGS MISO 26910

Morrison 24' above base
055

8/19/23

USGS MISO 26911

Morrison 40' above base

8/19/24

Lakota unit 17, 12' above base 7 Lakota 1. Ostracodes present, DO NOT BOIL

~~Morrison Ranch, Aladdin area~~

8

NAME

Maple

DATE

Aug 20, 1957

Maple loc. 100

- 8/20/1 Top 2' of Morrison, unit 10
 - 8/20/2 Upper part unit 9, 4' below
USGS MISO 26930 Top of Morrison
 - 8/20/3 Labota, Maple unit 15
Discarded
No soil. Middle of unit, 80' above
base of Labota
 - 8/20/4 Morrison, 22' below calcareous
USGS MISO 26931 maple, unit 5 (top of unit)
22' above base of Morrison
(correct label in bag 8-5)
 - 8/20/5 Morrison, base of unit 5.
USGS MISO 26932 17' above base of Morrison
 - 8/20/6 Morrison, maple unit 3,
USGS MISO 26933 9' above base of Morrison
- These would be Bank sl.
-
- USGS MISO 26924 Nicholson ranch, loc. 80
 - 8/20/7 Morrison 9' above sandstone
unit 3
 - USGS MISO 26925 15' below Top of Morrison, unit 4
 - 8/20/8 7' below top, unit 4
 - USGS MISO 26926 11' below top, unit 5 near calc. mudstone
 - 8/20/9 La. Kota, unit 7, 3' above base
 - 8/20/10
 - 8/20/11



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

October 10, 1957

Mr. I. G. Sohn
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 (Penn.) 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

DAB/vh

cc: Kathy Karlson
U. S. Geological Survey
Room 338 U. S. National Museum
Washington 25, D. C.

Don.

8/21/57, p. 7

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' 10.6'

11. Claystone, sandy, scattered chert and quartz grains. Red with minor green mottling. 12.8'

8/21/57 mudstone about 4' above base of unit 11, non calc. *not here*

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, conglom. bed which crops locally as ledge. 15.6'

not

9. Sandstone, fine to coarse grained and conglom. 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. 6.7'

NAME

Robinson
Sah

DATE

Aug 23, 1957

Robinson's Skull Creek section
at New Haven Triangulation point

8/23/1
USNM Loc
39948

Skull Creek 130'± below
Newcastle *Merrill ore*

8/23/2

Skull Creek, ^{15'±} above lower
sandy zone in upper part
of section

8/23/3

Noting

Skull Creek or Newcastle,
Transition zone above
phosphatic nodular sand unit
and 7' below Newcastle
sandstone

8/23/4

Middle unit of Skull Cr. Sect
offset from above. 26'±
above silty zone at base of Skull Cr.

8/23/5

Offset, lowest non silty, non-nodular
sh. at base of silty unit of Skull Cr.
4' or 5' above Fall Riv. - Skull Cr. transition

8/23/6
USNM Loc
39949

silty zone ^{26'±} above 8/23/5, 31'±
above Transition zone

8/23/7

NHM 27 Lakota 361'-363'

8/23/8

Fall River clay above ore, Pit No. 5
Homestake Mining Co., Platte, or
area. To USNM minerals

United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE

In charge.

No. *8/20/23* Name { **Field:**
Determined: *Morrison*

LOCALITY: *Belle Fourche R.*

Mapel 86 - 8

18' above base Morrison

Collector:**Date:** *8/20/57***Memoranda:****Notebook:****Page:** *3*

United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE

In charge.

No. 8/20/25 Name { Field:
Determined: Morrison

LOCALITY: Belle Fourche R.

Map 86 - 9

75' above base Morrison

Collector:

Date: 8/20/57

Memoranda:

Notebook:

Page: 3

NAME

Robinson

DATE

8/24/57 p. 3

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

8/24/12

24' above base of Tullock
Member of Ft. Union Fm.
Road cut in sec. 16, T56N, R69W
Cambell Co. Rockypoint to
Weston Rd

8/24/13

35' below contact with
Ft. Union, same fm
same loc as above

~~D154~~

8/24/14

SW 1/4 sec 24, T. 56N, R. 69W Cambell
County, Wyo.

same as column D442.

~~same as above~~

~~D154~~

ss. basal Foxhills about
10' above base

8/24/15

Pierre shale 50' below
8/24/14

NAME

Robinson & Sahy

DATE

8/24/57 P 4

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

Sec 32 T 54N, R 67W.

8/24/16

35-45' below Top of bentonitic member (Kara of Robinson et al) mudstone between two thin bentonite beds

8/24/17

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

8/24/18

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

8/24/19

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	Thickness Feet
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-	

121

NAME

DATE

--	--

NAME

DATE

7/12/57

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

McCoy West of Rock Creek
& N. of Rd.

Layton Post

7-12-1

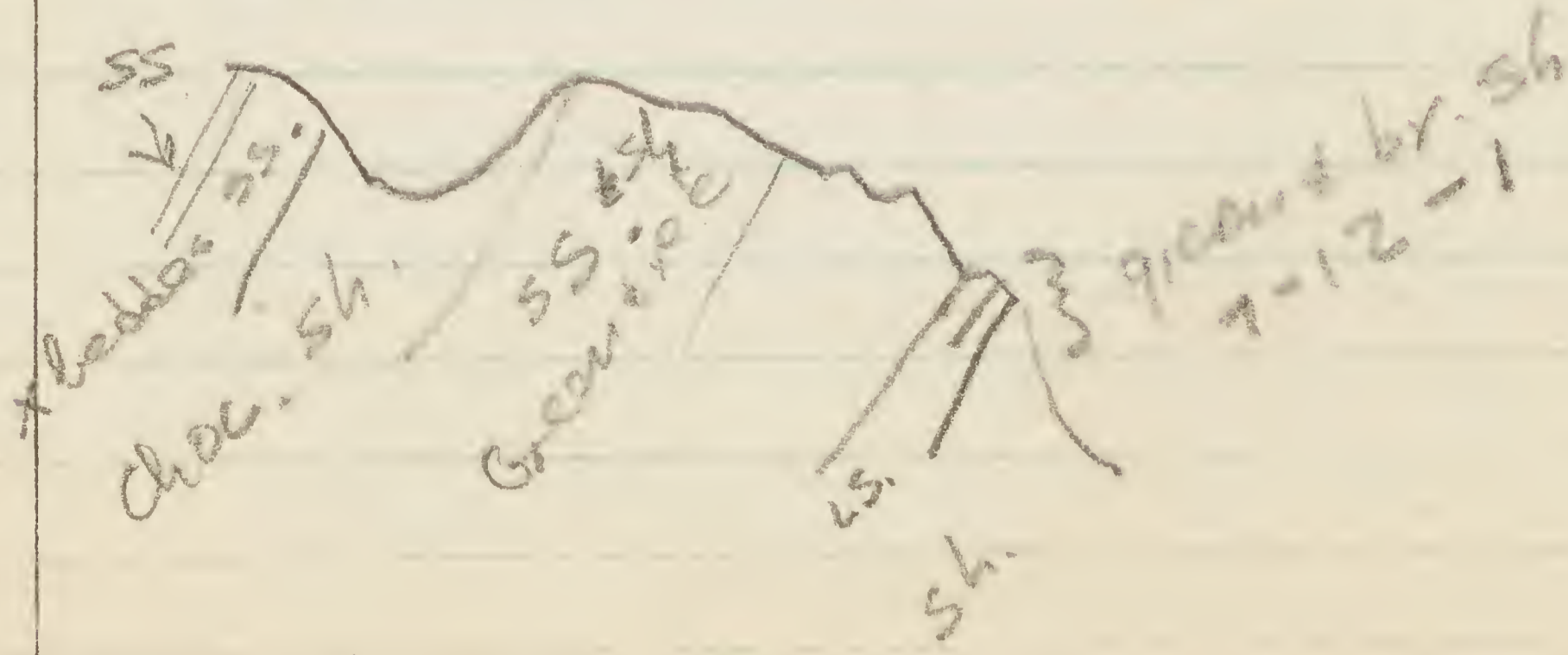
Outcrop creek side with
Ls Cap. 39 paces
W of Sighu "McCoy" (Low)

195-200 W of City
Limits - North

7 Rd. W. of
0.1 mi. W. of
0.1 mi. W. of

Film 5 S. side of
rd. looking N at green
outcrop.

NE corner Rock Mine stake



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.

Fall River formation	Approximate thickness in feet.
----------------------	-----------------------------------

disconformity

Lakota formation

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
---	---------

page 1

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' |

page

Inyan Kara Creek Section #1.

- | | Thickness in ' |
|---|----------------|
| 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. | 2.5 |
| 13. Sandstone, fine to coarse grained, massive grayish-white, friable. Locally contains granules and pebbles of chert and quartzite, chiefly in base 4 feet. | 27.5 |
| 12. Claystone, partially obscured, upper 10 to 15 feet red, grading downward to purplish red in middle part; lower 10 | |

page 2

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. 8.5
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. 4.3
19. Siltstone, clayey in lower 2.5 feet, becoming hard, massive, sandy, white-weathering ledge in upper 2.0 feet. 4.5
18. Siltstone, clayey, and silty claystone, dark gray to black, hard, with carbonized plant fragments. 5.0
- disconformity
- Lakota formation
17. Claystone, silty, light gray, weather white. 2.0

- 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. 21.0
- 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. 18.0
- 14. Claystone, silty to sandy, dark brownish-gray, selenitic. 6.8
- 13. Claystone, sandy, gray to brownish gray. 2.5
- 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. 14.0

- | | |
|---|--------------|
| 11. Sandstone, cherty, conglomeratic. Chert and quartz in coarse grains, granules and small pebbles. Scattered polished pebbles and cobbles up to 0.7 foot in diameter. | 10.5 |
| 10. Obscured, probably sandstone or sandy claystone as above. | 15.0 |
| 9. Sandstone, fine-grained, massive, cross-laminated. | 6.0 |
| 8. Obscured by float and slope wash. | 16.0 |
| 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. | 16.0 |
| Total thickness of Lakota (rounded) | <u>128.0</u> |

page 4

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'

page 1

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'

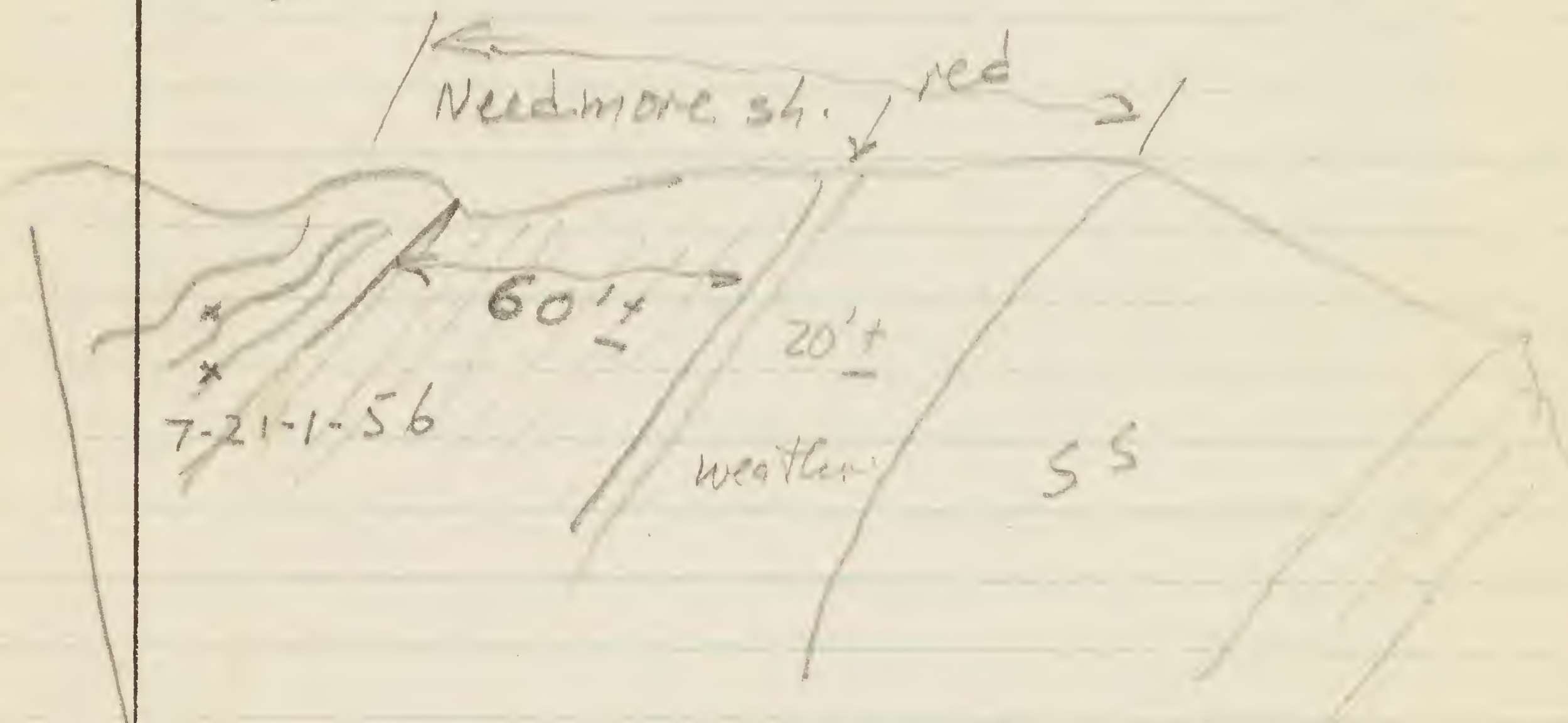
NAME

DATE

7/21/56

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

Quarry (New cut) N. of quarry
in W.V. Dev. section and
S of Penn. Glass sand Co. plant



*
*
7-21-1-56

7-21-1-56 Clay & shale red streaks
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

16do

Form 9-076

NAME

DATE

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

7/21/56 p.2

7/21/4/56 sh. with ostracodes
 north face near entrance
 of same quarry as 7/21/1/1
 picture show car & me
 at coll. pt.

NAME

DATE

7/16/56

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

7-16-56-1 Shale cuttings, cable tool,
 water well, black sh. at 80'-82'.
 Coll: I. G. Sohn & Daniel W. Sohn.
 Well 0.35 mi. N. of Cacapon
 State PK, W. Va. 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 687 to Brooke.

0 miles at RR. tracks in Brooke , take 608

3.5 miles 621 & 608 Guy House sign 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.

NAME

DATE

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

Aug 14, 1954

8/

8/14/1

American Park Canyon
 rd
 Hanging Rock Picknick Area
 Desert, red & brown shaly
 ls, or lumpy shale about 20'±
 above base (critenden section)
 check for qtz.
 coll. below 6'± shale
~~cliff~~ 10'± ls. cliff, shaly on top

NAME

DATE

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

	Aug 2 meet Gordon go to
Aug 3	Gold Hill Texas
Aug 4	" Miss
Aug 5	" Haywood Sta. Type Pac. N.C.
	go to Elly
Aug 6.	Aphelops

NAME

DATE

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

July 29, 1954 p. 1

7/29/1

USNM
LOC
39824



Alpine? 75' S. of Ogden
River 1/10 mi. E. of bridge
over Riv. at Municipal
swimming pool, Lorin Farr
Park in Ogden.

Slumped clay, pinkish sandy
located less than 1 mi.
from Mountain front.

NAME

DATE

July 26, 1954 p. 2

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

Rd cut 1/4 mile S of loc.
7/26/1 E1. 4700. Pleasant View
500 St. Rd

7/26/5
Gravel

7/26/4
Sand

workday in sand

7/26/3
Pink clay

7/26/3
USNM
LOC
39816

Pink clay 1'± below reworked

7/26/4
USNM
LOC
39818

Sand above clay and
below gravel.

7/26/5

Gravel No ostr. Discarded.

NAME

Clore

DATE

2/

0619.20

P71-4

Vienna □, WEX

Clore ls. and shale in ravine north of road one mile east of White Side school, Johnson Co.

Lamarella thurmanensis

- ls. dk shly weathers light on surface dense 1' 2"
- shaly ls. blk, very shaly, med. grained 1' 0"
- ls dk gray fig. 1' 8"
- sh. blk laminated non foss 2' 6"
- ls blk, dense, heavy bed fig. non shaly 3' 0"
- sh. blk. laminated 3' 0"
- ls lt gray dense 0' 6"
- sh. blk laminated 2' 0"
- ls, med gray shaly brittle 2' 0"
- ls, lt to med gray coarse grained very foss 1' 0"
- ? → sh. foss, med gray reddish not laminated (H) 3' 0"
- ls, lt gray fairly coarse grained 0' 6"
- sh. blk, laminated 10' 0"

193

Form 9-076

NAME

Kinkaid

DATE

K 7

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

0524.04
✓

P 71 A

Venna □ NE 1/4

Kinkaid yellow shale soft sticky
and fossiliferous, 1/4 mile east
of old Whiteside School,
Johnson Co.

Deloria serrata

194

NAME

Menard

DATE

0228.14

No 11 (F).

Union Co. Carbonate [SW 1/4]

Ill. Bull 48 p. 52 bed 10
is No 11 (F)

beds are numbered in
reverse of Croncis

Croncis	7 =	Lamer	14
"	11 =	"	10

= Cooper Miss loc. 7.

195

Form 9-076

NAME

Kinkaid

DATE

K-2

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

0 419.91

P56 (A)

Kinkaid shale, 10', in road $\frac{1}{2}$ mile
southeast of Robbs, Pope Co.
Fossiliferous shale at top

200

Form 9-076

NAME *Kinkaid*

DATE *K. 8*

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

0524.84 P 70 3

*Kinkaid formation in Creek
3/4 mile northeast Whiteside
school, Johnson Co.*

203

Form 9-076

NAME *Golconda*

DATE *6-7*

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

W. 595

*Golconda formation southwest
7 Runna, Randolph Co.,
Stuart Weller location.*

204

Form 9-076

NAME *close*

DATE *c3*

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

0619.20

No 4
*close formation, essentially
same location as C-1*

NAME Renault

DATE

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

Cooper 13 Dongola NW 1/4
= 0709.32
Union Co.

Cooper 13 II
5" shale green & blky, reddish brown
sh. 9

NAME

Paint Cr.

DATE

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

Cooper 18 (Miss.) Renault
 Guidebook 13 ann.

Field Conf. Kansas G.S.,
 1939

1st day Stop 6

Paint Cr. bed-3 — equiv. to 1952 l.

Golconda bed-11 — l.
 very foss.

Go from St. Genevieve Mo.
 or Ruma, Ill.

NAME

DATE

May 19, 1954 p. 3

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

South of Freyley's Store Cave in Rich
 Type of Swann's "Freyley"
 M. Galconda

Herdinsburg Top of Bluff.

5/19/5-

Ls. ledge 8'± Top Galconda
 covered.

Ls. ledge.

Sh 2'-3'

5/19/4

Ls. Massive 8'-10' (U. Galconda.) over
 Siltstone, sh. and Ls. Striper (Freyley)

5/19/6

1'

5/19/7

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

See Kentucky G.S. ser. 11,
 Bull. 16, 1955 p. 18-119.



- 5/19/5 Top of ls. ledge, very crumbly
- 5/19/6 Gray sh. just below 8' ls.
 This is the Top of
 new "Frayley member of Swanton

NAME

Vermis

DATE

May 18 1954 p.g

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

5/18/9

6" shale above coal
and below ls.
either top of Tar Springs
or shale immediately
below Vermis ls.

If calcareous it is
called Vermis if sandy
it is Tar Springs
(F. Water ostr.?)

5/18/10

Tar spring sh. just
below coal 7 5/18/9

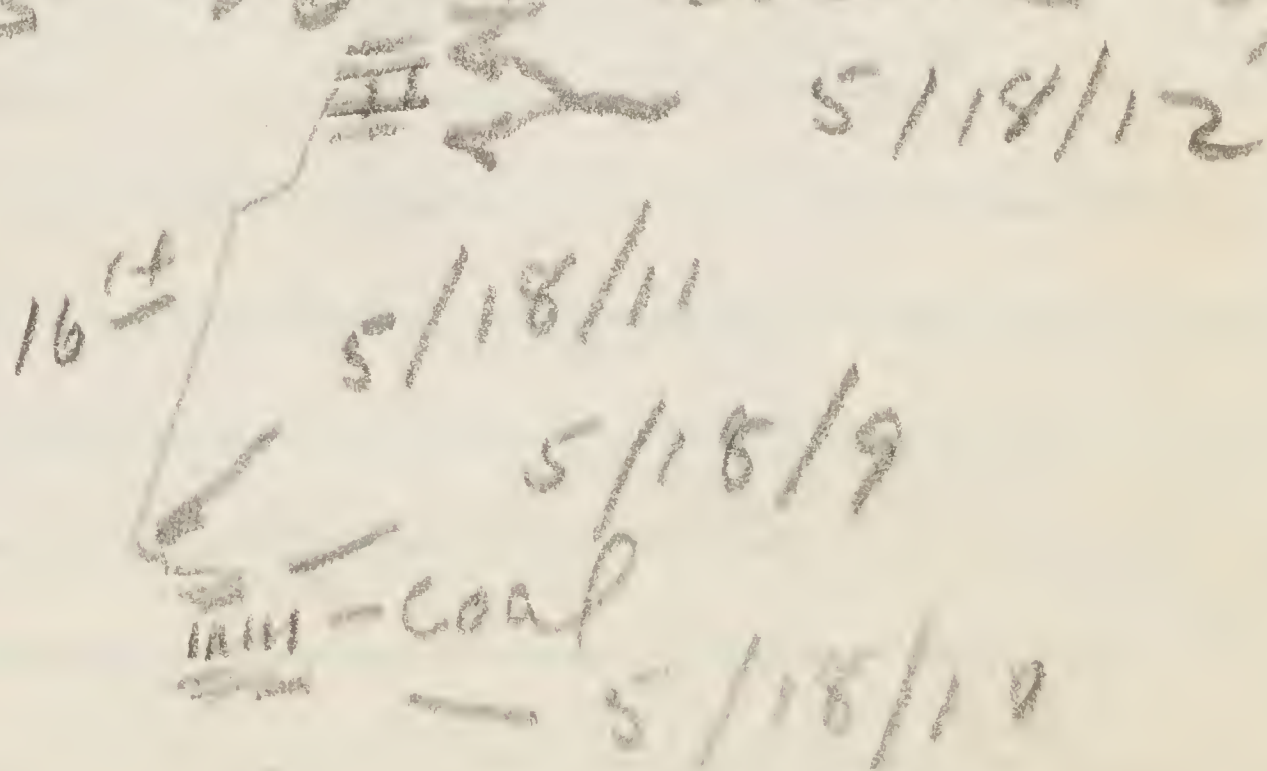
5/18/11

Vermis ls just above 1

5/18/12

12842

Vermis sh. across RR
Tracks 16' ± above 5/18/9



Brownfield

NAME Renault

DATE Cooper loc. 9-11

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

0511-51

Elmer SE_{1/4} W_{1/4}

Hardin Co. Golconda II
Sec 11, T 12 S, R 7 E
N-S road 500' N of S sec. line
Roadside below top of Knob.
"Main shellerville shale horizon"

Field Conference 6/38 Stop 2 bed 2

Shale, black shaly

road ditch at hand side gully
South.

Renault formation:

(129) →

- Limestone, heavy bedded 3'
- shale dark shaly 10'
- Interbedded shale and limestone,
very fossiliferous 10'

~~Stop 18 - June 1938~~

May 18, 1954

Not recoverable

road built up.

235

Form 9-076

NAME

DATE

May 14, 1954

U. S. GOVERNMENT PRINTING OFFICE 16-27601-1

Spurgeon cut

"Spurgeon Hill"
with J.S. Galloway

films 1, 2, 3 cut with J.S.G.

5/14/1

Spurgeon ls. rotted and spalled

RR cut is s. of Spurgeon Hill.

GEOLOGICAL SURVEY

SURVEY OF THE

In charge.

No.

8/12/52

Name

Field:

Determined:

LOCALITY:

Collector:

Date:

Aug 12, 1952

Memoranda:

Notebook:

Page:

1

United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE

In charge.

No. 5/14/1	Name	Field:
		Determined:

LOCALITY: RR by Spurgeon Hill
 Salem dirt

-20

Collector:
 165
 116

Date: May 14
 Notebook: 1954
 Page: 1

Memoranda:
 2 of 2 bags



IN REPLY REFER TO:

G-P33-165

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

335 U. S. National Museum

April 6, 1960

Profassor 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,

I. G. Sohn

I. G. Sohn

Since my last to Dan Lerner, I don't send her reports to you. Since my last to Dan Lerner...

*Dear Dr. Sohn, ~~Witt has never had~~
the locality I know is 7 1/2 miles
out of Millstadt to the S.E. 1/2 mile from the
Vogel School - which is on the Millstadt-
Waterloo rd. and is 4 1/2 miles N.E. of Waterloo.
It is on Prairie des Long Creek at the old iron
bridge on the dirt road going from Vogel School east
I don't have a topo map of the locality. It is maybe
1 mile west of Floraville on the same road - may
less. I never went to Floraville.*

Sohn

122

p. 1-50

123

51-100

124

101-150

125

151-200

126

201-end

July 5, 1961

Cross p. 86, 87. Monongahela Riv.
steep hill

Cross, A.T. Smith, W.A. & Arkle. The Jr.
1950 Field Guide for the Special
Field Conf. on the stratigraphy,
sedimentation, and nomenclature
of the Upper Pennsylvanian and
Lower Permian strata (Monongahela,
Washington & Green series in the
Northern portion of the Dunkard
Basin of Ohio, West Virginia and
Pennsylvania Sept. 8, 9 and 10.

7/5/1

Shale break ^{5-11 ±} approx 5-6' above
base of Bernwood Ls. member,
Monongahela fm. at above stop.
Ls. has scattered ostracode.

Stop-2, Clay pit. Brick yd. at Vance,
2.5 miles (2½) ESE Wash & Jefferson
Campus. Wash. E T, Wash. Co., Pa.

7-5/2

Top of Washington Ls. member of
Washington fm. Pealed surface

7/5/3

8' below 7/5/2

~~No Rain June 25-1, Rain July 2~~

Live ostr. in puddle, permanent water

p. 1

July 6, 1961
John
Yochelson
Stewart & 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 Riv. Turn rt on Co. Rd. 21. First
good outcrop. P. 10 of Guidebk at
38.4 mil. of p. 10, called
Arnoldsburg Ls. in Guidebk but is L. cap.

7-6-1-61

Nodular Ls. about 1 1/2' above
main Ls. Little Captina Ls.
1/4/9/56 with chara.

7/6/2/6

sh. just above Ls. 5" ± just
above 7/6/1/61

stop. 2

Clark Hill, Monroe Co, Ohio
= 2/4/9/56 of Yochelson.
Rd past Valley Methodist
Church. Monroe Co. rd. 43.

7/6/3

Platy Ls. 1 1/2' ± above nodular
layer, high in the Green fm.
Cross calls Nineva in this
section p. between 54 & 55 at
bottom of p. next to lowest ref.

7/6/4

Ellis coll. 3-4 1/2' above 7/6/3
in 1 1/2' interval, Ls. at 1195 ft.?

7/6/5

Yochelson coll. L. Captina

stop 3-

Cut on N.E. side Co. Rd. 9 1/2 mi N of Ohio 148
at Armstrong Mills

7/6/6

~~was the first Rehnert Carolina 7/6/30/59~~
Little Captina

July 6, 1961

p. 2

Stop. 4 SW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 10, Wayne Twp.
Belmont Co, Ohio # 7/10/30/59
Rd 92 # 10/8

7/4/8/61 7/6/7 is Yoder's this
is 4/6/8/61, center of
little capting # 7/10/30/59
along curve of hill
100' up rd. on either side
of rd. U & M. Little Cap.
2 bags

Rd is $\frac{3}{10}$ mile N of Rd 18
Post office at Norwich

p-2

July 7, 1964

- 7/7/7 Nineveh at Rd. 2 mi
from Nineveh
- 7/7/8 Nineveh at creek level.
- 7/7/9 Nineveh, 1st outcrop
 $\frac{1}{2}$ mi NW of Nineveh on 18
assorted lithology.

July 8, 1961

7/8/1 = Yochelson loc. of u. wash.

7/8/2 = 4/10/28/57
Sh. at base of Little Captina
along creekNW side Belmont Co. road 2,
0.45 miles E of Ohio 798 (along
Deep Run.

shale → ls.

7/8/3

Ayers Lime Quarry

SW $\frac{1}{4}$ Sec. 19, Pease Township
Belmont Co., OhioLower Wash. Lime
2 miles N of Martins Ferry, Ohio

7/8/5

Berryhill loc. 311

N side Hway 40 beside

"The Broster" Diner

0.2 mile West of Sugar Hill

2.2 miles ENE "S" Bridge

Wash. West Quad.

Highest strat. pt. in \square

#? Ninerch.

7/8/6

Yochelson

p. 2

July 8, 1961

7/8/7

Rubby L₃, 1 foot below 1 ft L₅
 which is 2' below 2 ft. L₅
 Section in new Rd. ^{0.2 m'} N of
 40, + S. of Vance. This is
 Nineveh?

7/8/8

Upper part of L₅#2 going N
 from 40 Nineveh?

7/8/9

Lower 3 ls. beds in L₅#2
 N of 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. see
 Guidebook - ostr. not studied
 latest Navarro may be
 a little younger.
 several Test. foram spp. in
 fauna.

Forams 150' - 300' neritic

Plancton: Benton
 in Red Bank 15% Planctonic
 shallower than underlying
 neritic.

Coll. in lower part.
 Photo 13 stop. 1

stop. 7

Tinton in cr. by house,
 but in corn fields a
 hill of Hornstones
 plowed by farmer for
 exam. by part. photo 15
 coll. "stop 7" is from
 plowed ditch.

Oct. 9 2nd day Field

Step 1 ditto. Hornerston

Step 2 Walk down field
to creek - New Egypt.
based on rare areas
forams - has cret.
megafossils. Coll.
near top of unit.

~~Road is 0.3 (3/10 mi) N
of post office & Rd 18.~~

NAME

DATE 5-22-60

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

5-22-1

T-22 S, R. 6 E, N 1/4 sec. 12
isolated hill, about 300 yds.
to E of Hwy 54, Otter Co, N.M.
slabby ls. varved with
ostr. + small fossils. Below Huaco
age unmet. coll. from flat
outcrop not found.

Arrive Alamojado mesa

5-22-2

Shale with fusulines
just below contact with above. ^{USNM Loc}
39746

See E+R SR-61-3

5-22-3

Shale ^{60'} below coll. 5-22-2

The above 2 on Alamojado □
Hwy, N side of rd. N 1/2 sec. 2 T 16 S R 11 E.
"Bursum" equivalent (basal Wolfcamp)
just below Huaco in Huaco Mts
see p. 40 at mile 8.5 SEPM 1959
Field Conf.

age

NAME

DATE

May 23, 1960

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

5-23-1
USNM Loc
39747 see
E+R
SR-6-3

Thin seam above ls. containing
seaf in by Baccharis
Sacramento ls - GSA loc.

43.55 at junction of M.H. Way to	
Alamogordo	51.51 Historic marker
Dog Canyon	$\frac{43.55}{7.96}$

01 7.96 mi. S. of Dog Canyon marker
Turn E. on rd. across tracks to
loc.

NAME

DATE

May 25, 1960

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

5-25-1
USNM Loc
39748

Bear Peak NE cor. SW 1/4 sec. 35 T 18 S, R. 3 E., Dona Ana Co., N. Mex., on rd. to ruins of Lead Camp. Thin shale below ls. contains ostracode "on Hueco. Compare with rept. to Bachman on ls. cognate. *Some Oryz.*

5-25-2
USNM Loc
39749

ls. between chert, small blabs of ls. NE 1/4 SW 1/4 sec. 25 T. 18 S., R. 3 E. On E side of hill on spur where lead camp rd. crosses spur. Virgil, probably U. Virgil equivalent "Cisco".

Pictures taken E on white sample from Lead mine where fly collected.

5-25-3
USNM Loc
39750

SW 1/4 sec. 25 T 18 S, R 3 E Pennsylvanian probably Virgil

NAME

DATE May 26, 1960
P. 2

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

5-26-9
brachiopods
small
Echinoids
Pelecypoda

Hueco within ~~100~~ 50'
above the base of Hueco
on N. side of Upton
Canyon. Write
Bachman for location

5-26-10
65 ft.
Forams
Fusulinas
F? A

Quarry strat. higher, slump
from quarry face - Fusulinas
wash for ostracodes - forams
to Herbert
roll 2 - picture before
George & Don as Fran Upton
m'ts.

NAME

DATE

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

see Guidebook AAPG

41-23-69

41-23-1

Karrifan Stop 1 - 1 1/2' ± of
clay below 1' of sandin creek bed. in plastic bag
coll: Jim Hayward & F.B.S.

41-23-2

41-23-3

Woodbury Stop 3 cont. so
glauconitic as merchantville
Ostr. fragile

41-23-4

Merchantville 2 bags
glauconitic

41-23-5

Stop 5 Marshalltown
above ironstone

41-23-6

Marshalltown at base,
above English stee

41-23-7

~~Wernona~~ stop 7 at base
top of Marshalltown

41-23-8

Wernona at base stop 7

41-23-9

Shell bed of Mt Laurel Stop 8

41-23-10

Wernona at base Stop 8

NAME

DATE

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

4-23-66

4-23-11

Basal Wenona or Top
7 1/4. Laurel
stop. 8
down creek

4-23-12

Wenona below shell
bed stop 8
near top.

4-23-13

Basal Red head
3 bags stop 10

4-23-14

Pellucida Hornes Tower
5' ± above 4-23-13
stop 10

NAME

DATE

4-24-60

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

- 4-24-1 Hornerstown in pit dug by Howe - 1'± below contact
- 4-24-2 Biostratigraphic stop 1
- 4-24-3 Kirkwood
- 4-24-4 Stop 8 Mansquan
- 4-24-5 Unconformity stops

NAME

DATE

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

1959

NAME J. Hiram Smith & I.G. Schindler DATE

7-13-59 p. 1

Morrison outcrop of Lo Roy
p. 64.

7-13-1

Bed 17 of sec. (chena seen)
2'± above base.

7-13-2

Bed 10? - channel sample
on face. ^{lower} 3'± - resistant
layer, first one above
basal ss. ± 6' thick. MF-16C

7-13-3

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

7-13-4

3"± shale seams above bed
2

NAME

DATE

7/13/59 P.3

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

W slope of hogback opposite
Matthews Drive at Mt. Vernon
Creek. Dip 20° into hill
on state Rd. 93. One mile
South of intersection of 40#
93.

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

7-13-9 11'± hand level above ss. which
is above 7-13-8 — This
is strat higher than first stop
sample is above 1st marlstone
in this section — fine claystone
olive green.

7-13-10 claystone above marlstone
approx. 25' above 7-13-9
still in Morrison, about
midway of Morrison section

7-13-11 Rd cut ^{0.5 mi.} N of 7-13-10 about .5 mi
S of Rd intersection
Kaston fm just below
basal Morrison ss. ledge.

NAME

Goode & Smith

DATE

7-17-59

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

NW 7 Little Mtn. NE 1/4 sec. 20,
T2S, R. 6W. Loc. D-4 of
Goode 1958.

USNM Loc

39850

7-17-1

~~D-4 of Goode~~

Gravel in cut with ostracode
field relationship suggests
Provo, but no Cytherissa seen
with hand lens.

7-17-2

USNM
Loc
39851

fine sand and less than
2% silt with snails &
ostracodes - a lense that
inter tongues with gravel of
7-17-1, just above 7-17-1.

7-17-3

USNM
Loc
39852

fos. lense in f.g. ss. about
10' strat below 7-17-1

NAME

DATE

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

7-17-59 p. 2

W of Little Mtn. center sec. 20,
T. 2S, R. 6W. approx. 4950'
contour

USNM loc 39853

7-17-4

sediments above gravel -
sues sulfate forms -

100' ± higher than prove level -
7-17-1.

7-17-5

USNM
Loc
39854

SE cor sec. 20

T 2S R 6W. - Lake Beds
probably below prove gravel.

Is this prove? T-20
Report.

First prominent terrace above
salt lake in this area.

7-17-6

USNM
Loc
39855

SW 1/4 sec. 25 T. 1S R 7W
E1. 4375 ± 15'

May be Stansbury or
anything else
about 100' - 150' below
Stansbury shore lake
bottom deposit overlain by
shoreline gravel

NAME

H D Goose

DATE

July 20, 1959

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

Promontory Point, Little Valley

Gravel pit.

7
7-20-1
USNM
Loc
39856

- stake 50-00 50'± S 25 W
stake. Lake beds above
gravel cemented with
tufa. 4' interval overlain
by gravel. coll. Top 1 1/2'±
Elev. 4500'± 25', Alpine?
Goose coll. LV-1.

7-20-2
USNM
Loc
39857

Lake beds above gravel
spit at Provo level. Top
gravel is 4835'
coll. 150'± NE of Flag 102.

7-20-3
USNM
Loc
39858

same as Goose LV-7
presumed to be the same
as pink bed 7-20-1
collected W of flag 102. ± 150'

7-20-4
USNM
Loc
39859

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

7-20-5
USNM
Loc
39860

lake

E. end main excavation,
E. side of gravel spit
4950'±, pink bed above
gravel.

NAME H.D. Goode

DATE July 20, 1959 p2

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

7-20-6

USNM
Loc
39861

Highest exposure
pink bed below truncation
Easternmost part of
cut at 50 to 50' ± all
10'-12' above rd. on
face of cliff. knocked
off by throwing stones.

~~7-20-7 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

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

7-23-1

Smith's loc. 21
Ls & softer shale below
with ostracodes ? l. cret, Non Marine.

7-23-2

Shale below loc. 43,
center $w \frac{1}{2}$ NW $\frac{1}{4}$ sec 21, T 29 N,
R. 53 E. about $\frac{1}{2}$ way between
SF-21 & SF-413, Shale slope

7-23-3

Loc. 43 loaded with ostracodes
Approximately the same loc.

7-23-4

Ls. with ostr. loc. 46?
Center sec. 21 T. 29 N R 53 E.

Peromia

7-23-5

Loc. 207

7-23-6

200' S of original loc. 100' ± above
creek

7-23-7

2 bags. = SF-88 Mor L U Dev.
condemns by Harv. - Etds for
ostracods.

Pedro Gelabert
Jack Wolfe

NAME

DATE

5 days leave

NAME oriel

DATE 8-5-57

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

Roll 2 # 17 → 8-5-1
Stave on 8-5-1 John above
~~near to 8-5-2~~

8-5-1

2.9 miles S of Carter, sec.
line bet 34 & 35, 1/2 mile S of N. edge
T. 17 N., R. 115 W., Uinta Co., Wyo.
Morrow Creek-Lancey on Geol. Map of
N.A. Ls below dam and
snail bed just above road:
uppermost Green Riv. sediments

8-5-2

Ls. on Top of ridge of 8-5-1
Top of Green Riv.

8-5-3

Bridges possibly old or = to 1958 coll.
in 1958

SW 1/4 sec. 35 T. 17 N., R. 115 W
Uinta Co., Wyo 3.5 mil SE of Carter
Basal beds of Bridges

8-5-4

Approx center sec 36
T. 15 N., R. 114 W., Uinta Co., Wyo
Bridges - probably low to
middle. ~~outcrop~~ outcrop E.
side of rd below ls. ledge

600
600
600

#18 picture of outcrop
center of pile on spur below
gravel ca

NAME Oriel, Tracey

DATE Aug. 5, 1959 p. 2

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

8-5-5

one sample
reported
8-5-5

Chara S 7 Rd. (Tracey found
2 teeth & snails in same
area) lots of bones.

2.8 mi. N. of Lone Tree

SW NW 1/4 sec. 20 T. 13N., R. 113W
Hunta Co., Wyo

8-5-6

Upper of two ledges that
continue for a long way.
Upper pt. of ledge 1' is
silicified, lower portion
from which sample is
taken has snails.

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

NAME

Ruby

DATE

Aug 6, 1959

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

8-6-1

Stump fm. silicified? bush.

NENE 1/4, 27 T 28 N R 119 W.

North side of Thomas Fork

"Brom. horizon"

8-6-2

Fossil. ls. below shale
of Smith's Fork fm. ≠ Keokuk

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,
coll. 8-6-2 to 8-6-4.

8-6-3

Shale above 8-6-2 Smith's
Fork ≠ Bear River according to
Rueside # Thermopolis

8-6-4

Nodular ls. characteristic of
Thomas Fork unit.
near base, above 8-6-3.

8-6-5

Stanton's silicified Capeville
locality Rd. Thomas fork cross
creek dump on L side of rd
Old Graham Coal Mine, 0.6 mile E of
NW cor sec 30, T. 28 N., R. 119 W.
Upper pt of Capeville fm. Ruby has
section.

NAME

Rubey

DATE

August 6, 1959
p. 2

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

8-6-6

Peterson Is & Sh., Beck's loc.

Smith's Fork

SW 19 - 29 N - 117 W unswamped

Old Landers trail Rd.
Cokeville

NAME

Ruber

DATE

8-7-1 p. 1

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

8-7-1

~~sec. 31~~ NE SW $\frac{1}{4}$ sec. 31
T. 26 N R. 118 W, N side of
Mill Creek, Cokeville \square
Cokeville conglom with

corbula & oyster # Brachiopods
water. This is different from
Stanford's silicified material.
close to top of Cokeville

8-7-2

Mudstone below 8-7-1
Cokeville $\frac{1}{3}$ way down in Cokeville
formation

NAME

Love

DATE

Aug. 8, 1959

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

13 121

13069

at Jackson

5 2 miles field work

881

Lower slide lake
measured see published
in Oil & Gas Map 122
LS zone in Clowery fm.

NAME W. H. and * Epstein

DATE Aug. 11, 1959

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

"LAKE HENRY I"

- 8-11-1 Saw Tooth member of Ellis
SW $\frac{1}{4}$ sec 13 T. 11 S, R. 4 E.
Galatin Co. Mont.
- 8-11-2 Morrison? outcrop -
Tan claystone, conchoidal sec
13 T. 11 S R. 4 E., Galatin Co
Mont.
- 8-11-3 Skull Creek in gully of
Cabin Creek
only sec. 11 T. 11 S R. 4 E
- 8-11-4 W $\frac{1}{2}$ sec. 13 T 11 S R 4 E
Kootenai ls & shale
drifts for exposure

NAME

K. L. Lippert
Smedley
Jack Schmidt

DATE

Aug 14, 1955

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

8-14-1

75'± stratigraph. below top
of exposed Eikhorn Mtn. volcanic
soft material on either
side of ls with ostracodes

8-14-2

Shaly material 40± below
8-14-1 - 10'± interval
for spores

8-14-3

70'± below 8-14-2 for
spores

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 1/4

Center, Sec. 34 T 4 N 3 W
Jefferson Co., Mont E. flank
Bull Mtn.

NAME

DATE

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

8-14-6 Just on top of Granite and
 at base of Fertigny volcanic
 with pine needles!
 SE $\frac{1}{4}$, NE $\frac{1}{4}$ sec. 3, T 4 N, R
 7 W, Elk Park \square , sw tip
 of clearing "Pine needle loc."

8-14-7 Connection from basal
 unit of Fertigny volcanic at
 Lower Moulton Dam.

NAME

DATE

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

1958
Colo-Wyo

NAME

DATE

7/14/58

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

John Donnell
Bill Calbertson

7-14-1

Chalk Mtn. Douglass Cr. Member
of Green Riv. - f
Donnell unit 11 11" ^{extracalc}
ls. or limy siltstone,
and overlying calcareous
siltstone - near top of outcrop

7-14-2

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

7-14-3

unit 17, upper 3rd of
unit.

7-14-4

Unit #22 approx middle of
unit

7-14-5

Wasatch? Tongue units
30-33 Channel sample

7-14-6

Unit 4 - one Fish Tooth

NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 3, T. 15 S., R.
97 W., Mesa Co., Colorado.

NAME *Don Duncan*

DATE *7/15/58*

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

- Cliff opposite Rio Blanco.
- Section $\frac{1}{2}$ mi. W. of Rio Blanco 300' W SE cor
 sec. 32 T 3 S R 94 W., Rio Blanco Co., Colo
- 7-15-1 1'± bed of brown weathering limy ss. with Cyprides, composed 90%± ostracodes. 35' above base of Green River. Duncan unit, possibly Transition zone of Swain. 300' W SE cor. sec. 32, T 3 S, R 94 W
- 7-15-2 2'± foss. limy ss about 10' strat. below top of ridge above 7-15-1. 1st ridge for offset section about 450' - 500' = 490' strat. above 7-15-1, 700' W of SE cor. sec. 32 T 3 S., R 94 W **Duncan unit 24**
- 7-15-3 Veneer on ss. ledge, offset of section west of Rio Blanco. Mouth of Gulch, approx. same stratig. position as all 7-15-2 but probably 30'± higher. 2100' SW of NE cor. sec. 32, about 200' NW of rd. **Duncan unit 31**
- 7-15-4 Sh. just above 7-15-3 shell material poor. **unit 31**
- 7-15-5 2' ls. bed with gastropods & ostr. and 2' calc. above with ostr. & oolites. Base gasts. ostr. 3"± above pattern ostr. zone, coll. in 15'± above 7-15-4. **Duncan unit 33**

NAME D. Duncan

DATE 7-16-58

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

R2. Rio Blanco to White River.

SW $\frac{1}{4}$ Sec. 11 T. 1 N., R. 97 W

Base of Green River is 300' ± W

of Hwy & Pierce Cr. rd.

7-16-1

5' ± Ostracodal ss. spined form
abundant 2 bags.Picture of Duncan standing
on base of foss. bed & bank
on top of bed. 20' above
base of Green River.

7/16/2

oolitic with ostracod

6 feet (hand level) above
top of 7-16-1 4' ± thick bed.

7/16/3

4" ± bed of ostracodes above
oolites, G. binauricata? &
metacypris?

42' ± above top of 7/16/2

thin section of this.

7/16/4

Bioherm with ostracodes

maybe

400' ± above base of Gr.
Riv. N $\frac{1}{2}$ (central part) N $\frac{1}{2}$

Sec. 30, T. 1 N., R. 95 W

Just N of Hwy & Shults
Ranch.

NAME

DATE

7/17/58

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

7-17-1

Ostracode ss. in Gr. River

Morrow member of Gr. Riv.
 "N. of Henry Fork W. of Green
 River" = "shore" facies
 NW of "H" below Wyo. Geol.
 Map. of "Tqm" or "undiff" on map
 2 or 3 mi. N of state line
 T 12 N R. 10 W
 about 200' above red beds,
 possibly Morrow equiv.
 Call about 30 mi. S. of
 City Green Riv.

Picture 14 - S. edge Gr. Riv.
 outcrop of Lacey ~~section~~
 on
 Sun on Top, Bill
 below.

NAME

Oriel Tracey

DATE

July 18, 1958

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

7-18-1

USA 189, about 1/10 mi. S.
 of Junction with Rock Springs
 Cut off Rd. just E of
 Fort Hill Quad. 1 1/2" ± calc.

Tuff. about 75'-100' above

base of Bridges

Oriel # FH-170. see GG-57-9

7-18-2

1" ± ls. with ostracodes
 in middle member of Green
 Riv. - Measured by Bradley
 50' ± above rd. of Oriel
 Tqm unit. Along

Fontenelle Creek just
 east of Fort Hill □. E. of
 junction of Dry Hollow &

Fontenelle Cr. about 2
 miles W of junction of

Fontenelle Cr. & Green River
 (River)

NAME

DATE

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

7-19-58

7-19-1

Green River Algal bed
with ostr.

Monument Butte Area.

mil 146.0

sec. 13, T. 25 N R 110 W.

? Upper part of Green River.

NAME

D. G. Ruby

DATE

July 20, 1958

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

7-20-1

3rd or uppermost tongue of
Green Riv. near algal bed

T 24 N R 113 W. along
Hwy 189 0.85 miles to bridge
near rd. to Herschler Ranch, along Fort Hill
on North sloping hill
just south of Fontenell Cr.
about middle of U. Tongue.
(T9^s)

7-20-2

Base of upper limit of
Green Riv. just above
algal zone with gastropods.
Very oolitic

Eastern part sec. 9, or W. part sec. 10
T. 24 N, R. 113 W. about 0.2 mile
S. of sharp westward turn
along rd. to Herschler Ranch,
barely east of Fort Hill T

NAME Rubey, Oriol & Sohn

DATE 7/20/58 p. 2

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

7-20-3

Fontonelle Section 7
 Donnovan, 1950, Wyo Geol,
 Assoc. Guidebook
 Center, SW- $\frac{1}{4}$ sec. 12
 T 24 N, R. 115 W.
 FH-44 of Oriol.

called by Oriol upper
 part of New Fork Tongue of
 Wasatch which might
 be equivalent part of
 East to lower Middle Tongue
 of Green Riv.

7-20-4

Fontonelle Tongue of Green Riv
 Plastered on dip slope of older
 rocks. shale for possible ostracodes
 near base of Tongue

NE side of Pine Ridge, SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$
 sec. 27, T 25 N, R. 114 W.



NAME

DATE

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

July 21, 1958

7-21-1

NE $\frac{1}{4}$ sec. 4 T20N, R. 117W.S. of Kemmerer \square . W. side

of S. fork of Twin Creek.

Bed 11 of section measured
at station 377. Unit D, (Td)
68' \pm above base.2"-3" bed ostracodes in lower
part of bed.

7-21-2

chars, ostr. etc. Report on this

Josh Tracey #12

 $\frac{1}{4}$ post bet sec. 3 & 34 T.NE $\frac{1}{4}$, NE $\frac{1}{4}$, NW $\frac{1}{4}$ sec. 3, T. 21N, R. 118W.
Sage \square , Lincoln Co., Wyoming.

Put some in acid, crush rest.

Can be lowest Wasatch, Paleocene,
(or upper Cretaceous)

Jon Rau Rau

Shield Montgomery.

7-21-3

Sage \square , NENW NE $\frac{1}{4}$ sec 5, T. 21N, R. 119W

ls. ledge in "Bulldog Hollow fm"

Taylor has smails $3\frac{1}{2}$ mi \pm away
which are U. Eoc. May be L. oligocene.Tracey station 156. Field relations
suggest that this may be older than
Bulldog hollow i.e. "Sillens Ridge fm" above Tj.

NAME

DATE

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

July 21, 1958 p. 2

7-21-4

Oriel loc. 120.

On the road

NE1/4 sec 4, T. 22 N., R. 117 W.

on Harris Fork Plateau

4" slab on road side, not
found in placeUnit Tg

NAME

DATE

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

7-25-58

Robert Taylor Ranch
stop.

~~7-25-1~~
discarded

Base of Granddams outcrop of Madison
according to Fischer
Mich. State

~~7-25-2~~

In Sales Canyon
along horse path where
contact crosses creek
~~#~~ S. side of Cr.

NAME

DATE

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

7-26-

Morrison near top
 on rd .3 mi W of
 conduct rd junction
 of log. 1958 Wyo.
 Geol. Ass. Guideb.
 about 30' ~~from~~
 below ~~at~~ top

NAME

DATE

Black Hills

1957

see P.P. 404, 1964
for sections

NAME

DATE

8/10/1/57

Roth's Type loc 3 mi. N of
Piedmont
172 picture coll. 1

8/10/1
31171

Top of shale below ss limy
and top. 3'± above lime
conglomerate with ostr.

8/10/2
30997

Lime conglomerate

8/10/3
31172

shale 25' ± above 8/10/2
about 5' above ss. Typical
Lakota ss - character

3rd pit Offset south in
Wage's Sec

8/10/4

either N or L black
shale, above Green
Morrison & below
Lakota ss 5' below 8/10/3

8/10/5

Morrison near uppermost lime
ledge. below 8/10/4

8/10/6

Ls 6' below 8/10/5 Bell says
Lakota L Morrison

8/10/7

2nd lime level Morrison shale
between 2 lms below 8/10/6

8/10/8

Black shale above 8/10/4 L?
below ss

8/10/9

Gray clay just below 8/10/8
Roth says at contact below L-

NAME

DATE

8/11/57

~~Haynes & Sutton~~ = mcf. 6.
 Haynes & Sutton type
 above ss. below which
 H & S collected

8/11/1 above 8/11/2

8/11/2 Laminated ostracod clay
30998

8/11/3 Variegated clay just
31009 below 8/11/2

8/11/4 Sh. with ostr. 3'± below
30999 ss. This is H & S.
his red ls coquina as
float, not in place.

NAME

DATE

8/11/57 p. 2

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

Spring Creek Section
of Waage - Morrison?

8/11/5 1st Liny unit, upper part
at least 40' below Roth
Top of Morris

8/11/6 Lower part of 1st. Liny
unit - chert
USGS 26934

8/11/7 shale below 8/11/6
8/11/8 - 8/11/10 above Sturgis (Fall
Riv.)
No 8/11/11 - 8/11/14

Near Mona Butte. Mapel Loc. 98
Sec 23 T56N, R 63W.
Crook Co. Wyo.

8/11/15 Mapel unit 5 ± = Mapel 98-5

8/11/16 } USGS 26921
8/11/18 } Mapel unit 10 in lower 10' ±
USGS 26922 } = MP-98-10 cor 10 ± ±

8/11/17 Morrison
~~Lakota~~ fm. coll Robbie = MP. 98-15.

8/12 - 8/13 with Page
No collections.

see also 8/25

NAME Henry Bell # 1. G.S.

DATE 8/14/1957

8/14/57

West Central
by ~~well~~ well - Good plant fossils
HB-29-53. shale
with plants etc
No coll.

Chilson Canyon, W. Cent. V.

8/14/1

3'± shale above massive
2' sand that has shale
break in middle - Lakota

8/14/2

shale break in middle - Lakota

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.
of Lakota ss. - Morris

8/14/5

USGS 26880

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

Ls. 14.4' - 16.2' below ss.

8/14/9

USNM 39942

sh. 16.2 - 21.9

8/14/10

USGS 26882

sh. 21.9 - 30.2

8/14/11

USGS 26883

Ls. - 2' 30.2' - 32.2'

$$\begin{array}{r} 21.2 \\ 2.4 \\ \hline 23.6 \\ 2.5 \\ \hline 26.1 \end{array}$$

$$\begin{array}{r} 4.6 \\ 6.3 \\ \hline 10.9 \\ 8 \\ 9 \end{array}$$

20
29.2

$$\begin{array}{r} 5.6 \\ 2.6 \\ \hline 8.2 \end{array}$$

10 ft BM

$$\begin{array}{r} 3.3 \\ 3.7 \\ \hline 7.0 \\ 1.8 \\ \hline 8.8 \end{array}$$

BM 32.9' 29.2' 1' 10.55

1.55

6.5
2.64

NAME

DATE

8/14/57 p3

8/14/19 } 2.3' ss grading into below
 54. red & gray thin
 1/2' x 11 sands, silty mudstone
 below - 20 base 55.1 from
 contact.

8/14/20 } above - 21
 4.9

USGS 26885 } Morrison Top of Sundance.
 8/14/21 }
 one inlet } Top of Sundance 55.1
 ostr. } 4.9
 Green minerals

Total Morrison 60.00

Dick Canyon T. 85. R. 9E

8/14/22 } mud below brecciated
 USNM Loc } ls on top of Lakota
 39955 } equiv. to Minnewasli

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

8/14/24 } Basal Fuson above brecciated
 ls. of 8/14/23 4.5' above ls.

8/14/25 } Dark Gray mudstone - Fuson 8' ...
 above red ls, above 8/14/24
 below Fall Hill

NAME

DATE

8/14/57 p. 4

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

- 8/14/26 Pale gray mudstone
2'± above 8/14/25
Fuson above minewash
below Fall Riv.
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 37½' above Ls
- The Fuson is considered
as Lakota. Minewash, 8/14/22-
8/14/23 is also Lakota
- 8/14/29 Mud in basal Fall River
on cliff outcrop
above Fuson - 3600 ft
at base of ss. above. 66' above
Ls of 8/14/23
Hand level Henry Bell.

17
5
—
12

NAME

DATE

Aug 15, 1957

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

Lord & Raby's Prospect
(claims managed from Bell)

Upper Lakota ss & interbedded
shale

8/15/5

Shale 28' between ss
ss 2 1/2' unsampled

8/15/6
USNM Loc
39943

shale 1 1/2' base is 45'
below limestone (Cromwelli)
same level by Bell

8/15/7

Same bed as 8/15/5
175' feet west of 8/15/5
packed along curbed rd.
bed is lighter in color

8/15/8

Chilson Canyon, 1/2' vertical
250' below steel
Jefferson Dam, coll.
below lower 1 1/2' limestone.
Morrison fm. sec. 8.



NAME

DATE

8/15/57 p.u

From back of nearly 15
Roughly shale sequence
Paper shale sequence
that has 350000 ft
of stracoides, very petroliferous.
Most of the ostracoides crushed
NW 1/4 of []

8/15/55

Silty material above paper
shale

8/15/56

Very silty stuff above

8/15/55 up creek.

8/15/57

Massive white ostr.
in paper sh. below

USNM Loc
39944

8/15/55

8/15/58

Ls. below & between
paper sh. below 8/15/57

30991

NAME Walcott
Price
Sohn

DATE Aug 16 1957 P. 2

- 8/16/7 Walcott unit "T" about
10 way $\frac{1}{2}$
unit "u" is ss - not sampled
- 8/16/10 Walcott unit "V"
ss not sampled
- 8/16/11 Walcott unit "X" - bands picked
muddier stuff.
NE $\frac{1}{4}$ sec 2, 4, 8 S, R, SE
- 8/16/12 Upper 16' variegated
claystone - silt increases
downward
12' interval not sampled
- 8/16/13 Brick red 8'
- 8/16/14 Brick red, calc. ? siltstone
18' channel sample
- 8/16/15 Link pipe ss grab sample

NAME

Goff

DATE

Aug. 17, 1957

8

Darton's Fullers' earth
loc. west of Artyk, Custer
Co. (3 mi W.)

8/17/1

Lacustrine clay above
Fuller's earth (white
Tufaceous material)

8/17/2

sample 2/3 up the slope

8/17/3

Fuller's earth for column

↑
White River of Dayton
shown on geological
Black Hills Folio.

Runge Mine

8/17/4

Interbedded siltstone and
sandstones above thick
Fall Riv. ss. (S6)

8/17/5

Red Canyon near
S. end of Long Mts
Base of S2 ss. w. Lakota
Elevation NE \square , SE street

NAME Galt

DATE Aug 17, 1957 p. 3

E side of Red Canyon
where base of Morrison crosses
rd. between Albright and
Fay Ranches Edgemont
NETT

8/17/11
USGS M250 26890

Morrison about 1 1/2' above
Sundance.

8/17/12
USGS M250 26891

Approx Middle of Morrison
top of Hill above 8/17/11
more calcareous

8/17/13

By a stock well see E + R
Road up to Top - Jewel
Cave SW \square just above gate
SE 1/2 S. 21 T 6 S, R 2 E. Custer Co., S.D.
L. Lakota just above
Morrison

8/17/14

Morrison Channel clip
sample 25' \pm start about
1' below Top

8/17/15
USGS M250 26892

Calc. Morrison about 40' \pm
below 8/17/14.

NAME

Goff

DATE

Aug 17, 1957 p. 2

Craven Canyon 1st exposure above the entrance of Dark Canyon, E side of Canyon

8/17/6

Morrison about 1' below Craven Canyon ss.

8/17/7

Morrison 25' ± below 8/17/6

8/17/8

Morrison, limy at crested

USGS M350

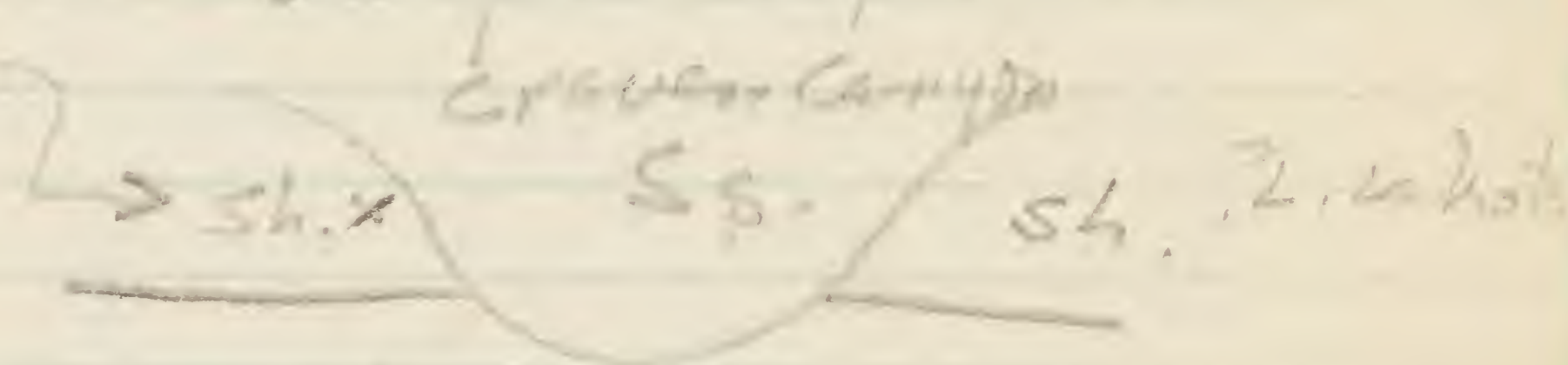
26889

color pit 11, 12

E side of N. Pass Mt. at intersection of rim and north side of Craven

8/17/9

Shale



Morrison

? Equivalent of Waage's coal facies

8/17/10

Went back stuff down slope of 8/17/9

NAME N. C. Cooper
D. Brobst

DATE Aug. 18, 1957

Pass Creek, Jewel Cave SW \square

8/18/1

Below S2 sand, 40' \pm below

8/18/2

Below 8/18/1, dark & green
part. 16 18/1 above yellow ss
and 18/2 below yellow ss
center of picture

Paper shale to left of
photo - no ostr. no coll.

E. face of Elk Mtn. about 1 mile
S of North Border of Dewey \square
NW $\frac{1}{2}$ sec 21 T 5 S R 1 E.
Custer Co. S.D., below 4800 contour

8/18/3

Dark mudstone, about 30' \pm
below S1 Lakota ss.
Lakota?

8/18/4

Morrison 40' \pm below S1 Lakota
ss

8/18/5

USGS M1250 25893

Morrison below upper 2 mi
about 80' \pm below S1 ss
or 40' below contact

8/18/6

USGS M1250 25894

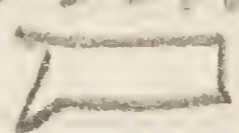
Morrison 100' below S1 ss &
below ls. layer

NAME

DATE

Aug 18, 1957 p. 2

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

SW 1/4 sec. 22 T. 43 N, R. 60 W. Wyoming, Weston Co. Clifton  Rd. to Elk Mts. Lookout

8/14/7 Morrison? about 5' above base

8/18/8 Morrison 4' above
USGS M1250 26896 8/18/7

8/18/9 Morrison 6' ± above
USGS M1250 26895 8/18/8

sect. 17 - Red Valley from top of Elk Mts, just above 8/18/7-9.

Whoopee Canyon near Farney Peak Boundary

8/18/10 Either Fuson or Lakota seems to be junked up

NAME

D Brobst

DATE

8/18/57 p. 3

North end of Whopper
Canyon Mann Ranch

8/18/11

Morrison 5'-10' below
Lakota paper shale

8/18/11

USGS MISSO 26897

Morrison middle of
fm. which is about
100' - will be 22' above
base - ostracodes
2 bags (see letter of
Brobst Oct. 10, 1957.

NW 1/4 NE 1/4 sec 29, T 44 N,
R. 60 W, Weston Co., Wyoming
Fanny Beck

slope S of 4651

Road through Mann
Ranch.

Maples loc. 65-11 & 65-13
are lower than 8/18/12

NAME

Maple

DATE

8/19/57 P. 2

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

Maple loc. 8, Oil Creek

8/19/8
USGS MISO 26901

Base of Maple unit 2 below
limestone zone 45' below
Top of undoubted Calc. Morrison.
approx 15-20' above Sundance

8/19/9
USGS MISO 26902

Top unit 3 12. ± above
8/19/8 - Morrison, or fr. seen

8/19/10
USGS MISO 26903

base of
18' above 8/19/9 unit 6.
below Lime bed

8/19/11
USGS MISO 26905

Mason Creek (loc. 194) at Morrison
20' ± below top

8/19/12
USGS MISO 26904

Morrison 9' ± below top

8/19/13

Lakota - 6' ± above base
~~Last color pict~~

NAME

DATE

8/19/57 p. 3

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

Mason Creek, Maple loc. 46

8/19/14 Sundance sh & ss. unit 1
about 4'-8' below top.

8/19/15 Morrison Maple unit 8
USGS MESSO 26906 10' above base of Morrison
is green sh.

8/19/16 25' above base of Morrison
USGS MESSO 26907 at base of Maple unit 10

8/19/17 15' above base of Morrison,
USGS MESSO 26908 ^{unit 10, 40 above base}

8/19/18 Morrison? dark mudstone top
Maple unit 11, 2' below top

8/19/19 Lakota 2ft. above top of Morrison
unit 13 of Maple

Last color part of Maple or
near base of section



25
22
3
24

NAME

DATE Aug 20, 1957 p. 2

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

- 8/20/12 Lakota above 8/20/11 (p. 1)
unit 12 about 20' above
Morrison
- 8/20/13 Loc. 112
upper part unit 3.
USGS M1250 26927 17' above base of Morrison
= coll 112-3
- 8/20/14 unit 4 19' above base
USGS M1250 26928 of Morrison = coll map 112-4
- 8/20/15 = Mapel 112-5, 33' above
USGS M1250 26929 base of Morrison
- 8/20/16 Mapel unit 6, about
55' above base, now
calcareous - MOLL?

NAME

DATE

8/20/57 10:3

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

8/20/17 2 Sect. 48 of Maple, Ropton Ledge
Cove Creek

8/20/17 Morrison dk mudstone
below lime. 30'± above base
Maple unit 6

USGS MIESO 26912

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

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

8/20/20 Ls. Maple unit 19 (top of)
USNM Loc 39946 Lakota = 48-19 of Maple Rept

8/20/21 Slide just above 8/20/20.
Maple unit 20 = 48-20 of Maple
Rept.
Bl & white 6, 7 roll 1.

USGS MIESO
31001

8/20/22 ^{W. Fry} Morrison, 5' above base, Maple
unit 6

8/20/23 ^{W. Fry} 16' above base of Morrison, 6' above
Discard base of unit 8.

8/20/24 40' above base, unit 8
USGS MIESO 26913

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

8/20/26 Top 1' of Morrison, unit 10, 105' above
Pict. 8, bl. & wh. roll 1.

NAME

DATE

8/20/57 p. 4

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

Section 57

USNM Loc 39947

8/20/27

Redwater sh. 20'-25'
below Top ostr. + Foram

8/20/28
USGS M1750 26918

Morrison 25' above base.
ostracodes seen

8/20/29

Morrison 30' above base
ostr. not looked for Hostile duct

8/20/30

Morrison 50' above base

8/20/31

Morrison? 75' ± above
base ss. = Maple

8/20/32

Morrison? 90' ± above
base. Non calcareous

8/20/33

Stockade Beaver road
up ridge between
Lytle and White Tail
Creeks - Get loc. from
Maple

NAME C.S. Robinson

DATE Aug. 21, 1957

8/21/1
 Top of Fossil Hill.
 Hand auger at approx Reel
 loc. N. of Devils Tower 3.7'
 Loess above Redwater. sample
 just $\frac{1}{2}$ ' \pm .

sec. NW of Devils Tower
 Maple loc. 54, Robbie
 has his own sec. here

8/21/2
 USGS MRSO 26915
 Morrison 1' \pm below
 lowest ls. 10-15' above Sundance
 Maple unit 3

8/21/3
 USGS MRSO 26916
 Morrison about 30' above
 base below ls. Maple unit 3.

8/21/4
 USGS MRSO 26917
 Morrison about 45' above base
 between ls. Maple unit 3

8/21/5
 Non calc. Morrison about 60'
 below top. Maple unit 4.
 above is Lakota ss.

Gertrude
 Mrs Mahoney

NAME C. S. Robbins

DATE Aug 21, 1957 p. 2

- 8/21/6 North side of Left Creek
NE 1/4 sec. 21, T. 53N, R. 66W, Crook
Co., Wyo. Morrison below line which
is 6'± below massive
white sand at center of
section. Robbie unit 9
- 8/21/7 8' above top of white ss,
in middle of Morrison section.
Calcareous mudstone. Robbie
unit 11
- 8/21/8 "Swimming pool Green" weathering
mudstone, non calc. 22'
above top sandstone
Nathley
- 8/21/9 Morrison? Carbonaceous
mudstone, 6' above 8/21/8
Is this Lakota? Nathley
- 8/21/10 sandy mud 11' above 8/21/9
- 8/21/11 Dark mud 6'± above 8/21/10
and 3'± below Lakota
conglomeratic ss. Top of unit 11
color 1, 2 of outcrop. coll. on
ridged to left of observer

C. S. Robinson

Aug. 21, 1957, p. 3

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 inter-laminated 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.

Protelliptio douglassi

1.9'

8/21/18 - unit 30

disconformity

8/21/57 P4

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'

8/21/57/p5

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' maybe porcelanitic. Polished chert quartz pebbles in float. 1.0'

8/21/57, P6

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, conglomeratic, clayey, friable. Scattered granules chert and quartz. Gray, weathers white. 7.9'
13. Claystone, sandy, scattered chert and quartz grains chiefly in upper part. Gray--green. 4.0'

8/21/57 p. 8

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.

19.9'

8/21/16 5 1/2 feet above base
of unit 7, calcareous
dark claystone

Total beds included in Lakota (rounded)

167'

page 7

8/21/57, p. 9

Morrison formation (?)

- 8/21/15 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'. 6.5'
- Top 1' of unit 6 - Waage calls Morrison, Maple calls Lakota*
- 8/21/13 5. Sandstone, fine-grained, marly, and sandy marlstone. Gray, weathers yellowish gray. Chiefly sandstone in upper third becoming marly downward. *lowest foot, just above* 14.5'
- 8/21/12*
4. Marlstone, locally silty, variegated. Green gray color with some red bands predominates in lower 26'. Upper 40' chiefly red, minor green. Numerous lenses and thin beds gray ls., zones scattered ls. nodules, and some ls. septaria. 66'
- 8/21/12, 7' above unit 3 in unit 4, swimming pool green, calcareous chert + frags.*
- USGS MUESO 26914
3. Sandstone, fine-grained, limey, weathers to platy brown ledge. 2.5'
2. Chiefly obscured, slope on variegated marlstone. 24.5'
- Sundance formation; Redwater shale member.
1. Sandstone, medium-grained, calcareous, weathers to yellow, Slope wash. 4' to ?

NAME

Solomon Robinson

DATE

8/21/57, p. 10

Fall River Section on Cabin Creek
NW $\frac{1}{4}$ sec. 8, T. 52 N., R. 66 W.
Measured by Robinson.

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

- 8/21/22 outcrop of Gypsum Springs
state secondary Highway 111,
between Heulett and
Devil's Tower. J. W. Taylor
measured & published this
section. Mudstone non
calc. 24.1
West side of cut.

8/22/57 Rain

NAME

Robinson

DATE

Aug 23, 1957 p. 2

Section, 1500' SW of Homestead
pit No. 5, Hulet Creek.

8/23/9 About 5' above "No 1" sandstone
Full River

Robinson's NE Newcastle section
"Newcastle No. 1"

8/23/10
USNM LOC
39950

Skull Cr. 1' below base of
Newcastle ~~Folan~~

8/23/11

Newcastle, 2 1/2' above base Gray
bentonitic clay shale (Use salt)

8/23/12

Newcastle above yellow
sandy unit, 10'-11' above
base

8/23/13

1' above upper Newcastle
siltstone basal unit of
Mowry (Nepoy & Collier)

8/23/14

6' above top of Newcastle

8/23/15

Top of "Nepoy & Collier") 3 1/2'
above 8/23/14, just below
siliceous mowry.

page 1
color 4-6 pack 2
bl. white 1.2 roll 2
Robinson

8/27/56 p. 3

Government Canyon section

call 18719 near base of cliff on T₁ 16, 17, 20 in
colored section near base

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 lavender stain; some Fe-impregnated layers. Much "worm"-working evident. 2.2'

page 3

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'

page 6.

- | | | |
|--|--|--------------|
| 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) | | <hr/> 120.0' |

disconformity

page 7

P. 9

Lakota formation (top only)

- 8/23/19 21. Siltstone, clayey, and hard silty claystone, light gray, weathers yellowish white. With carbonized rootlets and irregular branching ferruginous concretions. 4.4'
20. Sandstone, fine-grained, argillaceous, gray-white, local purplish streaks. Grades into unit below. 1.0'
- 9/23/18 19. Claystone, silty, tough, locally flinty, gray with local orange to red concretionary masses made up of limonitic ooliths of weathered siderite spherulites. 3.0'
18. Claystone, soft, plastic, purple in lower part grading up into green gray with purple mottling. 2.4'

- 8/23/16 Red mudstone lowest exposed unit in Lakota? check for calcareous unit 2 of Waage, lower part of unit
- 8/23/17 Red and green mudstone 35' above 8/23/16 check for calc. M or L? unit 7 of Waage
- 9/23/20 Yellow bentonitic claystone 19' above 8/23/17 M or L? somewhere between units 9 & 12 of Waage

NAME Robinson and Schuy

DATE 8/23/57 P. 13

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

Maple sec. 55 Northern side of Moore Canyon SW 1/4 sec. 35, T. 55 N., R. 65 W., Carbon Co. Wyoming

USGS MP80 26919

8/23/21

Top of unit 5. Morrison

8/23/22

USGS MP80 26920

Dark calc. chert above and below 1" limestone and some of the fossils. Is ledge 11" above base of unit 6

8/23/23

Unit 9, 3' above base moss clac. split chert with fossil bone & wood Morrison?

8/23/24

Top 1' of maple unit 9 of Morrison

8/23/25

Labota unit 10, 2 to 3' above base of unit

Chor 7 & Hallett and valley of Belle Fourche Riv

NAME C S. Robinson
J G Sohn

DATE Aug. 24, 1957 p. 1

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

8/24/1
Forams
Cephalic

USGS Mes. Loc. 12054
E 1/2 sec. 25 T 56 N R 68 W, North
of Mud Creek on New Haven -
Rocky Point, Wyo. road

Lower part of Gannox ferruginous
member of the Pierre shale

8/24/2

USGS Mes Loc. 12718, same ~~loc.~~
general loc. below
~~base of~~ Great sand lower 1/2 of
upper 1/2 of Gannox shale
member of Pierre sh.

8/24/3

Sec. 30, T. 56 N, R 67 W, Crook County
Meas sec. by Robinson

8/24/3

Top of Bell Fourche, **Forams**
Cephalic

8/24/4

2'-3' below concretionary ls.
bed near top of Greenhorn

ostr.
Forams

8/24/5

Cephalic
Forams

180' horizontally below
base of Turner. Subly member
of Carlile fm. Lower faunal
zone of unnamed member by Cobban

8/24/6

Cephalic
Forams

25' horiz. below base of Turner
in Cobban's upper faunal zone of
unnamed member of Carlile

United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE

In charge.

No. 8/20/3	Name {	Field:	Lakota
		Determined:	

LOCALITY:

Lakota sandstone
Maple unit 15-80'
above base of Lakota

Collector:

Maple

Date:

8/20/57

Notebook:

Page:

1

Memoranda:

United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE

No 057

In charge.

No. 8/20/57 Name { Field:
Determined:

LOCALITY: Corral Creek

Sta. 44 - west 12 (middle)

about 70' from base ~~Jun~~

Collector:

Date: 8/20/57

Memoranda:

Notebook:

Page: 3

NAME

DATE Aug 24, 1957 p. 2

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

8/24/7
Discarded

65' above base (horizontally)
Turner member of Carlile

8/24/8
Carlile

30' vertically below massive
concretion ls bed near
top of Sage Breaks member
of Carlile fm.

8/24/9

Nidbross fm. 115' feet
horizontally ~~from~~ above
base of Nidbross.

No
odd
fish teeth

Get strat distances
of all this section
from Robinson

8/24/10
To Carlile
Fossils

Outcrop Groat ss bed of
Garnon ferruginous member
of Pierre shale at Driscoll
Creek (Mitten Prong) North
bank sec. 14, T56N, R68W.
Creek Co, Wyo.

8/24/11

Disc

~~Sec 14 T~~ NW 1/4 sec 14 T56N
R 68 W, Creek Co Wyo.
Mitten Black sh. member, Pierre
sh., Tip fossiliferous zone

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. 3.2'

26. Sandstone, chiefly medium-grained, massive, cross-laminated, forms sheer cliff. Some coarse-grained lenses in lower part. 62.0'

25. Sandstone, coarse-grained, locally conglomeratic, friable. 18.0'

24. Sandstone, as in 26 above. 3.0'

23. Conglomerate, granule to small pebble, chiefly gray to black chert and quartzite, some claystone. 13.0'

22. Obscured by slope wash, upper foot appears to be conglomerate as above with claystone matrix. 5.0'

disconformity (?)

21. Sandstone, fine-grained, clayey, friable. Some interbeds sandy gray claystone. 3.5'

20. Claystone, sandy, dark gray, with irregular laminae and thin lenses fine-grained sandstone. 6.5'

8/25/1

8/25/57 P3

- 19. Sandstone, fine-grained, irregularly interbedded and laminated with dark gray to carbonaceous sandy shale and claystone. Friable. 5.5'
- 18. Sandstone, medium-grained, white-weathering, friable, alternating with dark gray to black shale. Alternating beds chiefly 0.4 to 1.0 foot thick. 22.0'
- plastic,
- 17. Claystone, dark gray to black, some shaly with leaf fragments at top. Sandy at base. 8/25/2 upper part of unit 7.0'
- 8/25/3 lower part of unit
- 16. Sandstone, chiefly medium-grained, clayey, massive. Lower foot contains scattered coarse grains of chert. 6.4'
- 15. Claystone, sandy, light gray; grades to unit below. 4.2'
- 14. Sandstone, medium-grained, friable, becoming increasingly more clayey downward. 9.2'
- 13. Claystone, sandy, to clayey sandstone. Light gray, weathers yellowish gray. 6.0'
- 8/25/4
- 12. Sandstone, medium-grained, friable. Gray, with partings shaly lignite in basal 2.0 feet. 10.6

Roby
Soh

8/25/57 p.5

5. Claystone, sandy, locally a clayey sandstone, gray. 8/25/57 3.7'

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. 8.0'

Total thickness of Lakota (rounded) 239.0'

Morrison formation (?)

3. Chert, irregularly bedded, gray-white to yellow gray. 2.2'

2. Claystone, locally sandy, with lenses slabby, fine-grained sandstone at top. Upper half is gray with greenish cast. 6.0'

1. Sandstone, fine-grained, with veinlets gray chert. 2.0' ?

Slope wash

Color 9#10 roll 2
Mona Butte

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



THIS SIDE OF CARD IS FOR ADDRESS



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., $SE\frac{1}{4}$, $SE\frac{1}{4}$, $NW\frac{1}{4}$, sec. 30, T.6 N., R.5 E., Sturgis 7.5 minute quad., Meade Co., South Dakota.

Glad to hear ostracods are behaving.

Sincerely,

Karl

NAME

Rob
30

DATE

P. 6

Aug 25, 1957

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

Maple's Morrison sec. at
Morrison Butte (same as 8/11 near
Morrison Butte). (section 98)

8/25/6

Lowest undoubled Lakota
channel of silt, sand and
shale below ss and above
Morrison.

8/25/7

Morrison just below = 8/11/7
which is Maple 98-15
This is Doubled Morrison
Morrison? 10' below
carb. shale at base
of Lakota

8/25/8

USNM LOC
39951

Morrison? red-purple
claystone, green on top
channel sample 19' below
Lakota

8/25/9

Morrison? dark claystone
above ls. 20-22' channel
below Lakota

8/25/10

USNM LOC
39952

Morrison, ls and claystone
just below. 23' below

8/25/8

Color 11, 12, 13 out 98. Sandstone on
bottom.

NAME

Robinson,
John

DATE

Aug. 25, 1957 p. 7

Gypsum Springs section, part of
Sandstone and spearsfish formation
E. side Belle Fourche River
opposite the mouth of Deer Cr.
Swy sec. 3, T 55 N, R 64 W,
Creek Co., Wyo. (Maple & Boyensell
1956 AAPG Bull. 40, no. 1 p. 84.)

8/25/11

Unit 9 ~~is~~ claystone green
& red

8/25/12

Unit 11, one foot below
Top - Loaded with ostra.

8/25/13

Unit 14, Top of Gypsum
Springs fm.

Look up E & R for Maple
listing Cythereella

Color - 14 - section

red is spearsfish.

See Wyo. Geol. Assoc. Guide. 12th, Field
Conf. 1957 p. 47.

NAME

DATE

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

J M DeLong Sun Oil Co. Casper
2-4507 Wyo.

Brawson loc.
3 mi S. of Mayoworth

NAME

C. S. Robinson & Schuy

DATE

7/11/58

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

- TYPE Morrison, Denver
- 7-11-1 Lowest clay unit 8' in LeRoy & Goldsboro. Gray clay & lime unit. Top 7 unit, sand below.
- 7-11-2 bottom 2' of unit of 7-11-1
- 7-11-3 above 7-11-2 in alternating ls & sh. zone below ss.
ls. is spec. LD-64 of LeRoy & clay is LD-65 ~~unit~~
- 7-11-4 10.6' above Gray Sh & ss unit LeRoy LD-18, LD-4/3
- 7-12-58 Picture 4 continental Divide
Loveland Pass U.S. 6 Looking W
E.L. Jvd 11984

Units	Thickness Feet
stone at top also contains fossils probably obtained from limestone conditions just below.....	24
86. Conglomerate, grits, and sandstone, maroon to gray, arkosic; interbedded red shale.....	85
85. Conglomerate, coarse persistent with large limestone pebbles.....	16
84. Similar to unit 86.....	54
83. Limestone, dark gray, very impure, nodular.....	0.8
82. Conglomerate, cross-bedded, gray, arkosic.....	3
81. Shale, green with some interbedded nodular limestone. (Few fossils?). (Roth and Skinner No. 178?).....	7
80. Conglomerate, grit, sandstone and shale, maroon to gray, arkosic.....	58
79. Shale and sandstone, brownish maroon to gray with micro-fossils.....	39
78. Limestone, dark gray, nodular appearing, with interbedded shale. Fossiliferous. Probably Roth and Skinner No. 177.....	6
77. Grits, sandstone, and shale, maroon and gray, arkosic.....	113
76. Sandstone, light gray, medium to coarse, arkosic, rather soft at top.....	3.5
75. Shale, maroon and green, micaceous...	1
74. Sandstone, blue gray, calcareous medium-grained, weathering brown.....	0.7
73. Shale, dark gray to greenish gray, micaceous. Largely covered.....	47
72. Limestone and interbedded shale, dark gray, fossiliferous. (Probably Roth and Skinner No. 175).....	9
71. Sandstone, coarse, gray, arkosic.....	15

see unit 86

NAME

DATE

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

Herbest:

Loc. 177 is 150' N of Road on a low hogback in and beneath a 9' interval of nodular limestone which makes the hogback and shaly marl.

This horizon crosses the road 344'-353' W of center of bridge over Rock Cr. near the Post office

Units	Thickness Feet
70. Shale and limestone nodules, dark gray. Mostly covered and variable in thickness. Fossiliferous. (Probably Roth and Skinner No. 174).....	5
69. Sandstone and shale, gray, coarse. (Cross over from north to south side of road).....	7
68. Shale, black to dark gray, micaceous. Interbedded, light gray, fine sandstone.	40
67. Sandstone, gray, coarse, arkosic.....	8
66. Shale and sandstone, black to gray, interbedded. Mostly covered.....	15
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

Units	Thickness Feet
54. Shale, green and black, micaceous, containing fossil plants.	28
53. Grits and conglomerates, pink, arkosic.	32
52. Sandstone, grits and conglomerates, light gray, grading into dark shale at top.	21
51. Shale, carbonaceous.	25
50. Grits and conglomerates, pink, arkosic.	30
49. Sandstone, thin, micaceous, light gray. Interbedded greenish-gray shale. Sandstones contain fossil plants and many peculiar markings. (Walchia Bed).	68
48. Conglomerate, cross-bedded, grayish red, arkosic with pebbles as large as 7 inches across.	13
47. Shale, maroon and green, micaceous. Thin-bedded sandstone and conglomerate near center about 2-4 feet thick. .	24
46. Similar to unit 48.	8
45. Shale, black, micaceous; fine sandstone.	8
44. Similar to unit 48.	10
43. Shale, maroon, micaceous.	6
42. Conglomerate, light gray to maroon, highly cross-bedded and containing thin layers of dark-maroon shale.	13
41. Shale, blue and maroon, micaceous.	2.5
40. Limestone, interbedded with shale similar to unit 41. Contains fossils.	4.5
39. Conglomerate, bluish gray, arkosic.	1.5
38. Shale, dark gray, micaceous.	1.5
37. Similar to unit 39.	5
36. Shale, greenish gray and maroon, micaceous.	19
35. Conglomerate, cross-bedded, maroon and gray, arkosic; interbedded maroon shale.	40

NAME

DATE

7/13/58

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

Belden shale loc. 7 Henbest.

West side of US 64 24
16.0 miles E. along rd.
from Glenwood to Dotsero
Road cut NW edge of Broad place
in Colorado River Canyon.

Marl & Ls. Belden sh	25' top
Cgl. molas	5'-12'
Leadville Ls.	10'

7-13-1

Shale & Ls. Belden?
above Ls & cgl.

miles E of Glenwood
Springs bridge
7.6 miles east of roadside
fountain.

39
5
19

page 2

- 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'

page 3

2. Covered slope. Limited crop of brownish gray carbonaceous shale about 10 feet above base. 56.0'

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

Arch Creek Section

Fall River formation (in part) Thickness

26. Sandstone, fine-grained, irregularly thin-bedded, cross-laminated, some massive beds, partings of shaly siltstone. Local Fe impregnation. Foras 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

page 2

Lakota formation	Thickness
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 redbrown, 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'

page 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'

page 4

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 thruout. Basal .2' to .4' is chiefly a granule and small pebble conglomerate, are locally chertified in irregular, gray-white tabular masses. 8.0'
9. Sandstone, fine to medium grained with scattered coarse grains, soft, clayey at at base. Weathers gray white. Contains polished pebbles. 3.0
8. Claystone, sandy, light gray with greenish cast. Scattered chert and quartz granules in upper 2 feet. Basal 0.5 foot is clayey, conglomeratic sandstone with scattered polished pebbles of chert, quartz and quartzite. 8.0
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. 16.0

page 5

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, had fossil wood in float. 16.0
5. Sandstone, fine to medium grained massive, cross-laminated, weathers white. 10.6
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. 23.5
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. 18.0-32.0

Total thickness Lakota

150.6

page 0

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?

page 2

- or more feet greenish gray. Few scattered polished pebbles in float may be from this unit or sandstone above. 41.0
11. Sandstone, fine-grained, to sandy siltstone, soft, grayish white, local secondary calcite cementation. 7.0
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. 15.0
9. Claystone, dark gray to black, shaly at base. 6.0
8. Shale, gray to greenish gray, with interbeds of dense light gray limestone. Contains charophytes, ostracods and poorly preserved gastropods.
- Clavator barrisi
Chara voluta
Aclistochara aff. A. mundula
Cypridea inornata
Metacypris angularis
Metacypris persulcata 9.0
- Total thickness beds included at Lakota 108.0

page 3

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 |
| 4. Claystone, dark greenish-gray. | 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 |

page 4

2. Claystone, greenish gray, calcareous. 1.0

Total thickness beds included as Morrison (rounded)
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

page 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'

page 6

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 gray shale and irregular beds 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. 11.5'
48. Sandstone, fine to medium grained, thin bedded laminated, weathers light gray with local yellow to orange-brown stain. Forms shelving ledge. 13.6'
47. Obscured slope, float of platy laminated sandstone. 30'
46. Sandstone, fine-grained, massive, laminated to cross-laminated; weathers light yellow gray to brown. 3.7'
45. Obscured slope. 6'
44. Sandstone, fine to medium grained, tabular, cross-laminated, "worm"-marked and ripple-marked bedding surfaces. Some vertical borings. Weathers buff to brown. 4'

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'

page 3

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 conglom., 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'

page 5

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'

page 6

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'

page 7

- | | |
|---|------|
| 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 31'
- Sundance formation; Redwater shale member
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 gully bottom. 5'-?

page 2

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'

page 3

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. 10.0'
15. Siltstone, carbonaceous, sandy, 1.0'
14. Siltstone, gray, sandy, massive, much carbonaceous matter and pyrite. Massive sandstone 2.0 feet thick comes in locally at top. Weathers gray to dark gray with local orange, yellow and pink stain. 5.5'
13. Sandstone, fine-grained, even-bedded, massive to laminated, weathers brown with local ferruginous stain. 4.5'
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?) 4.0'
11. Sandstone, even-bedded to thin-bedded, micaceous, brown-weathering with some rusty stain on bedding surfaces. 6.0'
10. Shale, silty, gray to brownish gray, thinly interbedded with sandstone. Upper half dominantly sandy; lower half shaly. 3.0'

page 4

9. Lignite, with local lenses hard, carbonaceous siltstone and sandstone up to 0.4 foot at base. 0.2 to 1.0'
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. 5.5'
7. Sandstone, fine- to medium-grained, massive, brown-weathering; basal foot some shaly sandstone interbeds. (Evan's Quarry sandstone.) 49.0'
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. 2.0'
5. Siltstone, massive, hard, subconchoidal fracture, gray; grades downward and laterally into rock type of unit 4. 1.5'
4. Siltstone, irregularly laminated with fine-grained sandstone, massive, fractures in big subconchoidal blocks, gray, contains plant fragments. 5.5'

page 5

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. 7'
22. Sandstone, gray mottled red, very fine grained to silt, irregular bedding. 5'
21. Claystone and silt; claystone medium gray to brownish gray, unctious, silt mottled purplish gray, massive. 7'
20. Sandstone, orange gray to yellowish gray, very fine grained, massive. 15'
19. Siltstone, gray to purplish gray, thin bedded, carbonaceous. 7'

page 2

18. Mudstone, greenish gray, some very silty, carbonaceous. 18'
17. Siltstone and sandstone, silt brown, ss. light yellowish gray, very fine grained, silt carbonaceous, ss. iron stained. 9'
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. 15'
14. Mudstone, olive to brownish gray, finely disseminated carb. material, upper 2' contains ostracodes. 19'
13. Mudstone, olive gray, contains ostracodes. 7'

page 3

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 $1\frac{1}{2}$ ' ss., very fine grained, calc., forms prominent ledge. 9'
7. Siltstone, dark brown and dark gray, some gyp and jarosite, contains ostracodes. 5'

page 4

6. Mudstone, olive gray, hackly fracture, contains ostracodes. 2'
5. Sandstone, yellowish gray, very fine grained, abundant interstitial material. 1'
4. Mudstone, olive gray, silty, contains ostra. 3'
3. Sandstone and mudstone, interbedded, ss. yellowish gray very fine grained; mudstone olive gray, silty, ss. forms thin ledges. 4'
2. Mudstone, dark brownish gray, sandy, abundant carb. material, contains ostracodes. 1'
1. Mudstone, olive gray, minor amounts silt, hackly fracture, unctious. 16'

page 5

• 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.

16'

Unkpapa sandstone (in part)

1. Sandstone, white to pale light gray, very fine grained to silt, cross-bedded, friable. 27'

NAME

Piscataway

DATE

Nov. 23, 1954

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

Indian Head Rd, N.Y. bridge
over Piscataway Cr.

11-23-1

dise

channel sample around
bend from road cut.
sample below and through
lower shell bed.

NAME

DATE

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

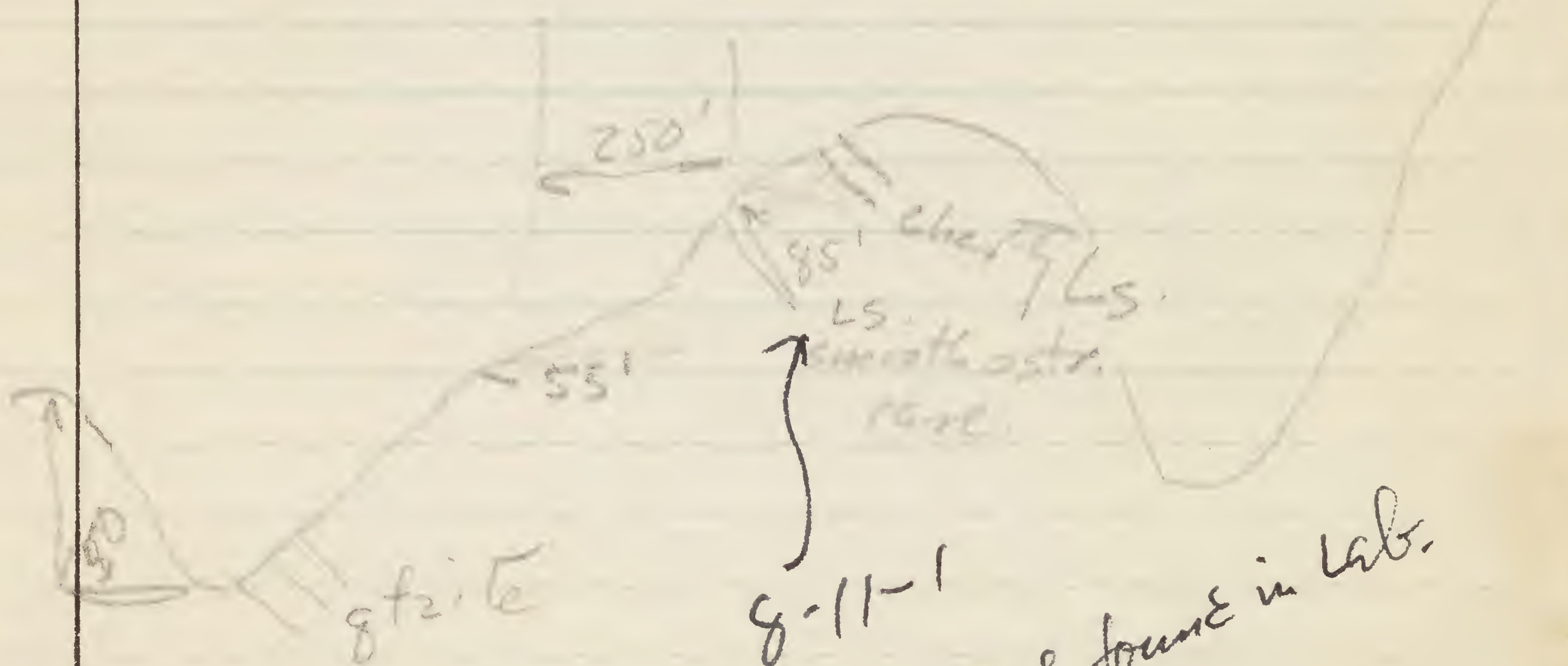
Aug 11, 1954 p. 1

picture 5 Gordon loc. 114 (113 offset)
from W.

LS. N55E ^{45°}
~~85°~~ W

E

407



g-11-1
disc. None found in lab.

NAME

DATE

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

Aug 19, 1954

Bear Trap Hollow section
 Smith & Moulton Canyon
 30' ± below Key Bed (Kinertia
 Bed of Sadlich) + ostracods.
 ls. sh. sequence U. Mississippi
 Ostracodes from Sadlich
 bed 240 30' ±

8/19/1

ls w. ostr.

8/19/2

sh. above 8/19/1

SE 1/4 sec. 11, T15R7E

S.L. Base standard

NAME

DATE

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

8/17/54

8/17/54-1. Shale below ls. with Gleypts
at station 22 of Dry Lake
section of Logan, Utah.

NAME

DATE

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

Aug 16, 1954

B.

N 23 W	11 E
N 7 W	29 E
N 37 W	19 E
N 25 W	16 1/2 E

B

Aug. 17, 1954

Bussel of B.Y.U. Booc, Utah
 worked with Hunt, promised
 locality samples of Hunt's
 alpine, Boreville & Booc
 met him on outcrop in
 Dry Lake section (out of Logan, Utah)

NAME

DATE

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

Aug 12, 1954

Allens Ranch \square , see Gordon

8/12/1

shale 80' above ls. ^{-95"}
Great Blue fm. about
20' wide coll near top
and includes some ls

8/12/2

ls. just above sh. base
foss. slab

8/12/3

foss ls. within 5' of

8/12/4

No ostr. Discard

8/12/4

ls. with silicified
see Gordon coll. pick out
slabs 7 8/12/3 from bag.

NAME

DATE

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

Aug 11, 1954 p. 2

down draw above @ Tzite
? Equiv to Foot Ranch or
Diamond Peak Equiv.

8/11/54/2

Shale with microfossils
below 3rd rib.
walk down creek from
road to N - NW.

NAME

DATE

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

Aug 10, 1954 p. 1

8/10/54/1

Barbark hills shale slope
near road, Gordons call .54-1113.
Chamman's sh, Miss.

NAME

DATE

Aug. 9, 1954 p. 1

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

8/2/54
No Ostracods
disc
8/2/54

Stale, calcareous above
Dis. of Gordon and Shell Oil
Geol. 50't W of Shell
Stake 529. Miss. (U.)
Gordon coll. 1954 no. 105
Welsh of Shell oil

Jim Osborne Desert
News Bldg. Shell Co.
Cret Micropal. forams
22-0471

33 Richard St.



2nd floor Petro Lab.

NAME

DATE

Aug 6, 1954 p.1

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

8/6/1

slabby ls. for etching
 same as Gordon 1954-96
 Elliptical Center N line of
 NE 1/4 sec 36 T. 18N, R. 57E.
 White Pine Co, Nev.
 75' ± W of rt. of way monument
 N of U.S. 50.

all 3 part 3 Gordon ls. 100
 4 " " " " 96
 8/6/1 is to left of 3.

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

NAME

DATE

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

July 30, 1954 P. 2

Jordan River Bridge

7/30/4

N. cross road W of Bridge
on E side of road 640'
from ~~intersection~~ stop sign

7/30/4

USNM
LOC
39826

Provo? cut road level.
has carbons

7/30/5

USNM
LOC
39819

Alpine? on NW side of
bridge abutment about
2' above water level

NAME

DATE

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

July 30, 1954 p 1.

George McDaniel's farms

Alpine Utah, rd to George
McDaniel's farms which is
probably second rd S. of in
Alpine Utah leads E. near
E end of town. Top of hill
road lead down to E and
forks. S $\frac{1}{4}$ cor sec. 19, T. 4 S R 2 E.
S. side of rd has outcrop, coll.
made N of rd. right above
ditch. Below and between I & N of
ALPINE on Hunt's map.
Alpine at 4990' picture 29.

USNM
LOC
39810

7/30/1

7/30/2

USNM
LOC
39811

Alpine on hill road.
~~SW~~ SE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec 35
T 4 S, R 1 E. In field, left
gate on rd. crossing hill
when headed S.

7/30/3

USNM
LOC
39812

$\frac{1}{8}$ mi \pm due E of center S 27
T. 4 S, R 1 E. Low alt. 4950'
in 2' hole in field on
crest of plowed field. Alpine

NAME

DATE

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

July 29, 1954, p. 5

Ogden Bay bird refuge
pictures of birds on extreme
S. end of dyke no. 1
to loc. 7/29/3 & 4
pictures of mirage

7/29/3
USNM
Loc
39820

3 1/2' - 4' below surface
of mud flat

7/29/4
USNM
Loc
39821

2" - 4" below surface
of mud flat

7/29/5
USNM
Loc
39822

mud at hot spring
W of Hoopes Hot Spring

one pile of dyke
with water on it &
mirage on left prob. #20

NAME

DATE

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

July 29, 1954 p. 2

Horse locality

sec. 20, T5N, R1W,
loc. on ridge E of Δ field
and E. U.P. RR which is
E base of Δ. and bounded
by Welch Riv. on other
2 sides 250 to 300

S 10 W to water tower of
Ogden Arsenal E S. T50W
from Uncle "V" on watch Mt.
"V" is immediately N of Weaver
canyon just visible over
intervening ridges near top
NW NW
SW of Amphitheater formed by
bluffs.

gray marl with snails
above provo? sands and silts

7/29/2
USNM
Loc
39825

pic. in

10 Amphitheater from Δ field
loc. on L. side

NAME

DATE

July 28, 1954

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

film 748 Ogden Canyon 2 in
Brazer 56 x 25., 1000' throw

~~7/28/1~~
7/28/1
Disc
No ostr.
2 irises

Morgan valley 2.7 mi. up.
Cottonwood Canyon road
N. from Hwy 30 S.
cross bridge draw to
left of rd. Norwood Tuff?

7/28/2

1/2 mile SW of 7-28-1
Alpine? at SE side of
rd.

No ostr.
Disc

6"± clay in sand near
top of hill
Fetters, sample — mile
up Cottonwood Canyon.

Norwood is in Early
GSA Bull 1943±

Gen. N. Central Wasatch
Olig. in age.

NAME

DATE

July 27, 1954

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

7/27/54

~~Alpine~~

Clay Pit near junction
of Harrison Blvd & VS 89-91
may be alpine

USNM loc 39817

NAME

DATE

July 26, 1954 p. 3

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

U.S. 89-91 300 yds N.E. of
Utah Hot springs alt. 44100'-
44150', NW slope of hill
above rd. cut. E of Hway

7/26/6
UNM
LOC
39823

Calcareous tuff on white,
has ostracodes. Age?
Cambria sp. age indet.

NAME

DATE

July 26, 1954 p1

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

Ogden

Weber Co. Gravel pit alt 4800'
 Pleasant View Rd. 500 W.
 Go N. on Washington Blvd to
~~N. Ogden~~ Town of N. Ogden bear
 W. on old Hwy 89 to junction
 with Alberta Drive entering
 at V angle from East.
 Turn E. on Alberta Drive
 about 1/2 mile to 500 West
 Street, turn N on 500 W. St.
 7/10 mile to gravel pit.

7/26/54
 No est. disc. prep

Gravel 6'± below Tanj
 Provo? silt and sand.
 The altitude is classic Provo.
 Ecologically - about 20' below
 Provo Lake level.

7/26/54

USNM
hoc
39815

Sand and clay. 18"± above base
 1/4 to 1/2 mile away from shore.

NAME

Galconda

DATE

8-1

0225.70

P10sp.A Shawneetown T SW 1/4

✓

Galconda limestone and shale in road cut near Douglas school, Hardin Co

5' NEW formation

11 S 8 E sec. 25

2' shale beneath ^{Hardinsburg} ss.

"very top of Galconda"

12' sh. o.l.s below.

196

Form 9-076

NAME

DATE

K3

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

0428.75

P51B

Kinkaid limestone, coal, fossiliferous shale, and sandstone in draw 3/4 mile southeast of Glendale, Pope Co.

197

Form 9-076

NAME

DATE

K. 4

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

0520.76

P 65A

Kinkaid fossiliferous yellow shale
with white calcareous nodules,
in road $\frac{1}{2}$ mile south of Veatch
School, Johnson Co.

198

Form 9-076

NAME Kinkaid

DATE K S

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

0521.47

P65.T
Kinkaid limestone and shale
in ravine, 1 mile northwest of
Bloomfield, Johnson Co.

199

Form 9-076

NAME Kinkaid

DATE 196

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

0523.11 P69(A)

Kinkaid fossiliferous, gray clay shale along road 1 1/2 mile east of Bloomfield, Johnson Co.

NAME Kinkaid

DATE K9

0535 SW 1/4 P 3977

Kinkaid formation, presumably
in SW 1/4 sec. 35 about 2 miles
southeast of Bloomfield,
Johnson Co.

202

Form 9-076

NAME Golconda

DATE 2-5

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

0616.88

P13 Sp. D

Golconda shale light gray
fossiliferous, NE $\frac{1}{4}$ sec. 16, T. 12 S.,
R 7 E, Hardin Co.

NAME

Clare

DATE

2-4

05A19.06 25(A).

Clare formation along road
and Whiteside branch of
Hays Cr. 4 miles east and
1/2 mile N. of Glendale, Pope Co.

206

Form 9-076

NAME

Vanna fm.

DATE

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

Coyote 10

Union Co. Carbondale T

West bluff of creek

SE SWSW Sec. 26 T45, R-1W

see Bull 48 p. 47

207

Form 9-076

NAME

Kinkaid

DATE

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

Cooper loc. 5 Brownfield No. 7
 June 1938 P3 Stop 10
 = Kinkaid 1

NAME

Kincaid

DATE

Cooper 3 = Kincaid 4

Vernon  N 1/2

shale, fossilifer. yellow brittle
with white calcareous
nodules, sample in road
formerly the "Marion Rd"

NAME Paint Co.

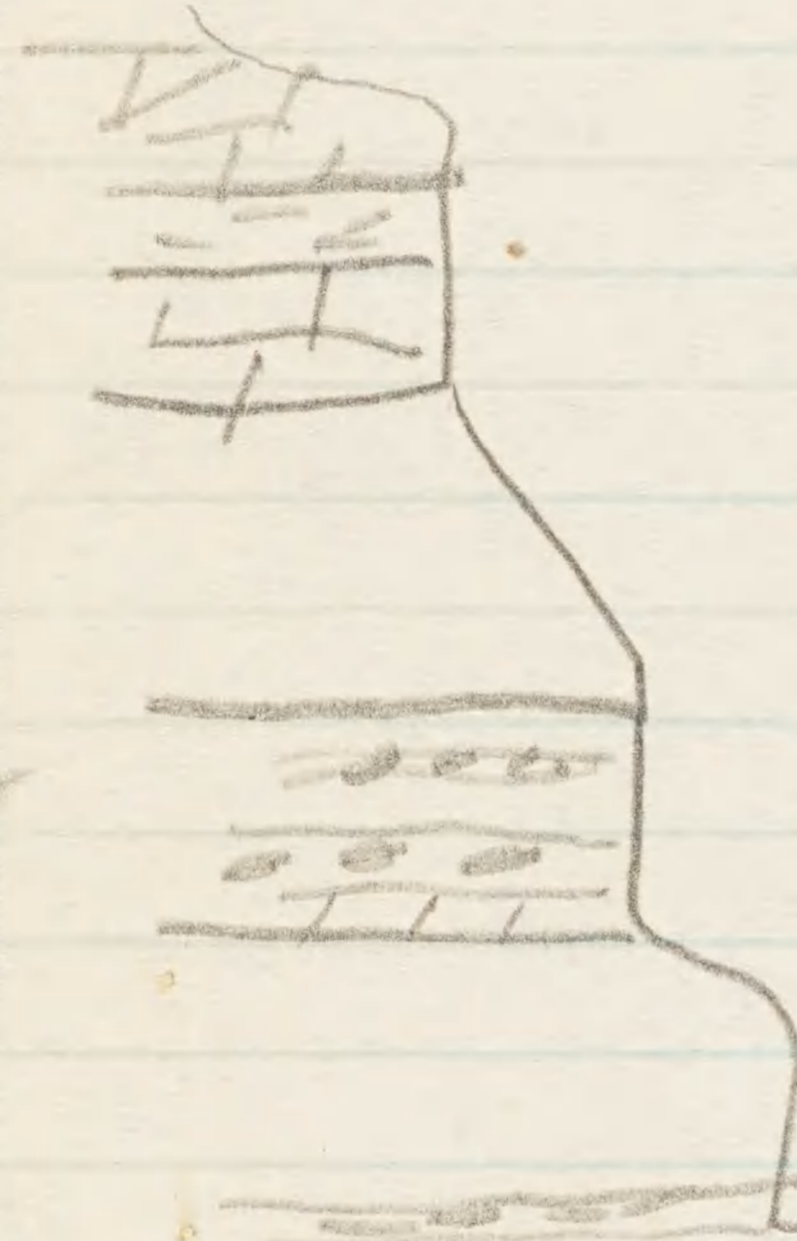
DATE

Cooper 2 (Miss)

Baldwin □

Poison 17

Chert



bed 32

Massive ls. in falls.

Thin layer

Cooper 2

Cooper 2

8' ±



— road

NAME

Cooper 28 equivalent

DATE

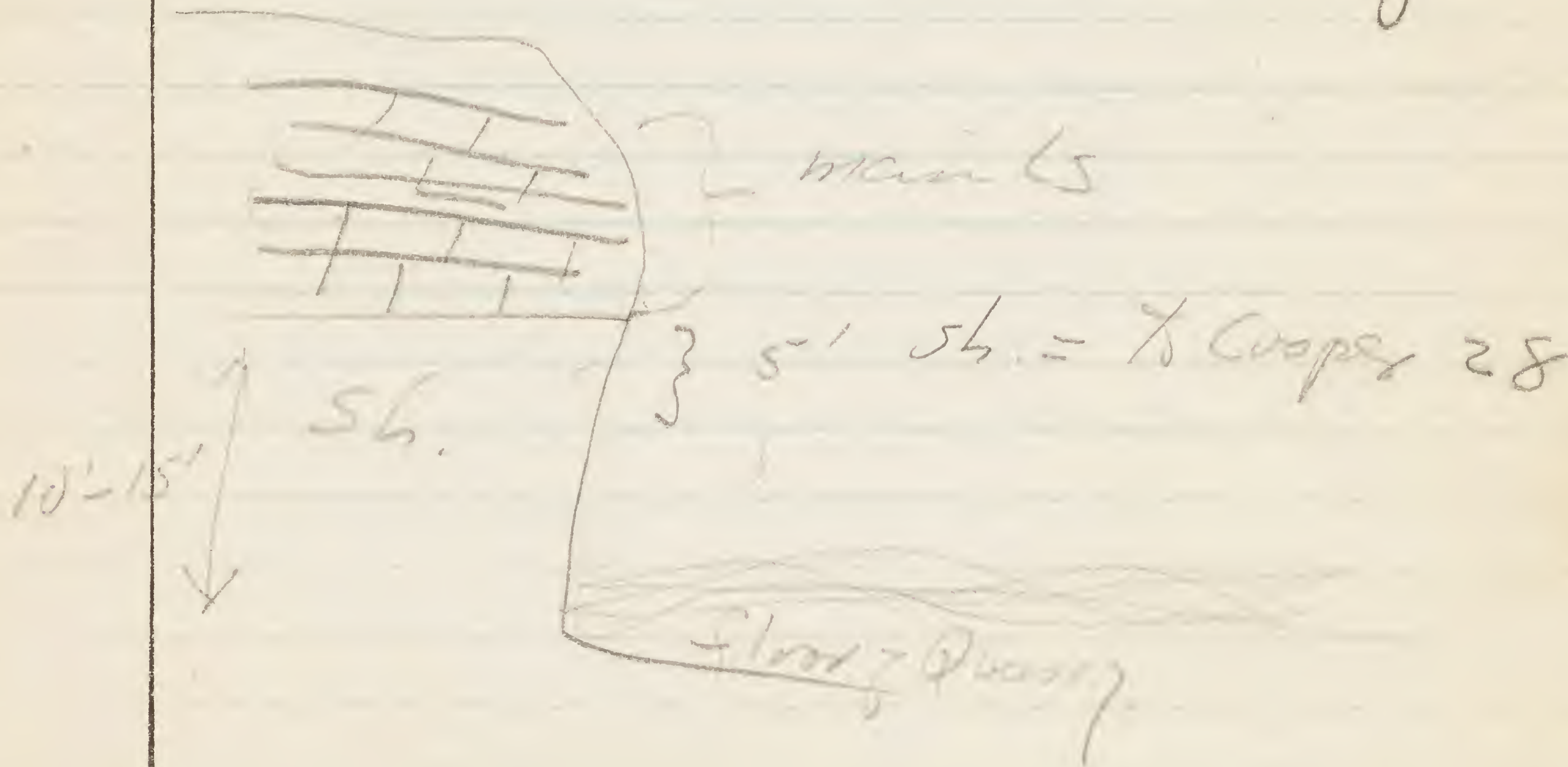
U. S. GOVERNMENT PRINTING OFFICE 16-37601-1

for Cooper's Vermula equivalent horizon in close

Go S. out of Chester Hwy 3 cross St. Marys Riv. about 1/4 miles S. about 3/4 mi S of bridge rd. rises over 25' solid ls. upward on top. 1000' farther S. is a crushed stone rd leading up and back N. to small quarry 50'-75' above Hwy (vertically).

This Quarry is in close ls. Cooper's spec equiv. to S' shale immediately beneath Main ls.


Ford W.P.A. Quarry



NAME

DATE

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

Weaver's Paint Creek
locality 7 1952 is
Floraville. on
Waterloo 

school 2 mi W of Floraville
outcrop $\frac{1}{2}$ mi ~~W~~ E
of that school.

NAME

DATE

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

G. Soc. Kentucky, Chester
Field Excursion, Apr. 1952

G (238)
G 2951
1952

Southern Indiana &
Western Ky
Chester

New Harmony Indiana
Sampson ← Pennsylvania
The Workman's Inst.

NAME

DATE

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

May 20, 1954 p. 1

Rock Creek Mining Co and
Frayleys Hole no. 7

5/20/1

Top of Downish Bluff
sh. or base of Bethel

5/20/2

343'-345' shale 1st. shale
in top of Sheflerville
below top Dolomite unit

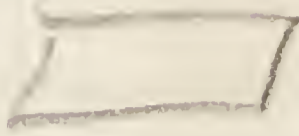
NAME

Glen Dea

DATE

May 19, 54 p 5

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

Copied 11.
Shawneetown 

IGS Bull 41 p. 194

June 1938 stop 9

slope covered by ledges
of Glen Dea LS.

5/19/11

Shale below LS ledge.
= approx Copied 11

5/19/12

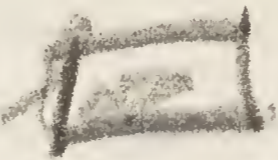
Clay between LS ^(2'±) just above
5/19/11 LS. has prisms
and crinoids. = Glen Dea

NAME

DATE

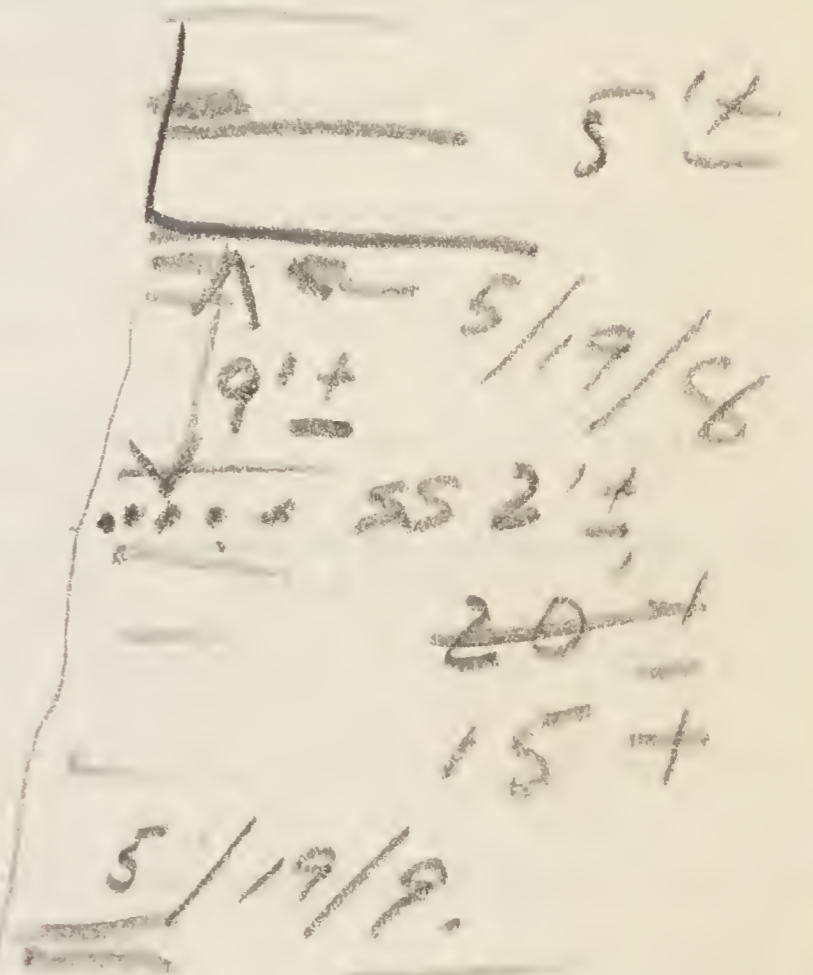
U. S. GOVERNMENT PRINTING OFFICE 16-37601-1

May 19, 1954 p. 4

G-1 loc.
 Shawneetown 
 Go N. from cave in rock turn
 left 1st rd after creek
 bear left to abandoned house
 and gate, walk down rd
 Ls. ledge 5' ± (same as 2nd ledge
 of Freyley's sec.)
 shale beneath 20' ±

5/19/9
 no str.
 disc.

shale below ls. = 5/19/6
 top of Freyley
 = ? G.1 ?



5/19/9

shale 15' ± below 5/19/8

5/19/10

clay in Ls. above 5/19/8
 ≠ 5/19/4 stratig.

NAME

DATE

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May 19, 1954

p. 2

Philadelphia School House
old road due N. on W side of
Cr.

5/19/2

weathered cherty ls. fossilif.

S.S.
covered
shaly at bottom

5-19-2

2'± cherty ls
fossilif. 34

foss. ls.

covered

Sh

shaft dump
has sh. & coal.

5/19/3

disc

no. 027.

sh. in dump y shaft probably

C-2?, may be some th. else

NAME

Clore

DATE

C-2

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0311.73

P15 SpA

Equality W. St. 4

Clore shale, gray, sandy and fossiliferous near bottom exposed in road cut south of Lodes store 700 feet north of Philadelphia School Hardin Co.

Carbopora
Neobolus
Perrinites

LS, shaly in slump	3' +
LS, heavy bedded dk	2' 0
SS mostly congl	15' 0
→ Sh. gray fissile, gray sandy at bottom fossiliferat bottom	8' 0

NAME Golconda

DATE G-6

0324.04 P15 sp. C Equality

Golconda formation in road cut
1/4 miles northeast of Gross,
Hardin Co.

Staley ls. with thin shale layers

Not recoverable
May 19, 1954.

NAME Golconda

DATE G-4

May 18, 1954

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

0414.56 P 26 I Equality Pt. 1

Golconda formation exposed where
Brushy Fork cuts west Bank
just N north of center sec. 14, 2
miles n.w. of Hicks, Hardin Co.

Penhook Cr.

5/19/1 Golconda 20' ± above top
of Barlow (Penhook Golconda)

loc. lower rd. just before
ford in Cr. rd. to Kaylor's
ridge



NAME

DATE

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9, 10, 11

files 8, 9, 10

Kunkaid Quarry
Green sh. on Top
Kunkaid Quarry on Maps.

5/18/19

foss. shaly lim 4' ±
above massive ls.
which is quarried
probably Kunkaid

5/18/20

foss. shale and ls.
composite around

5/18/19

U. Kunkaid

NAME

Kinkaid

DATE

May 18, 34 KI

p. 6

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

0419.50

PSS (4 1/2) Brownfield [] NE cor.
Kinkaid ls. and sh. in RR cut 3
miles E of Simpson, Pope Co.

0419.7

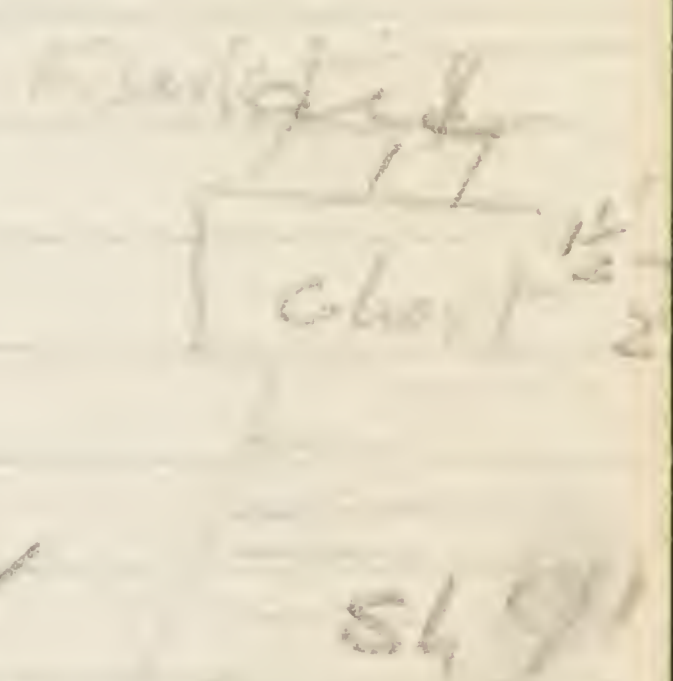
"Not Kinkaid

Top of sec. is under bridge
sec. goes S.

5/18/16

USGS
12840

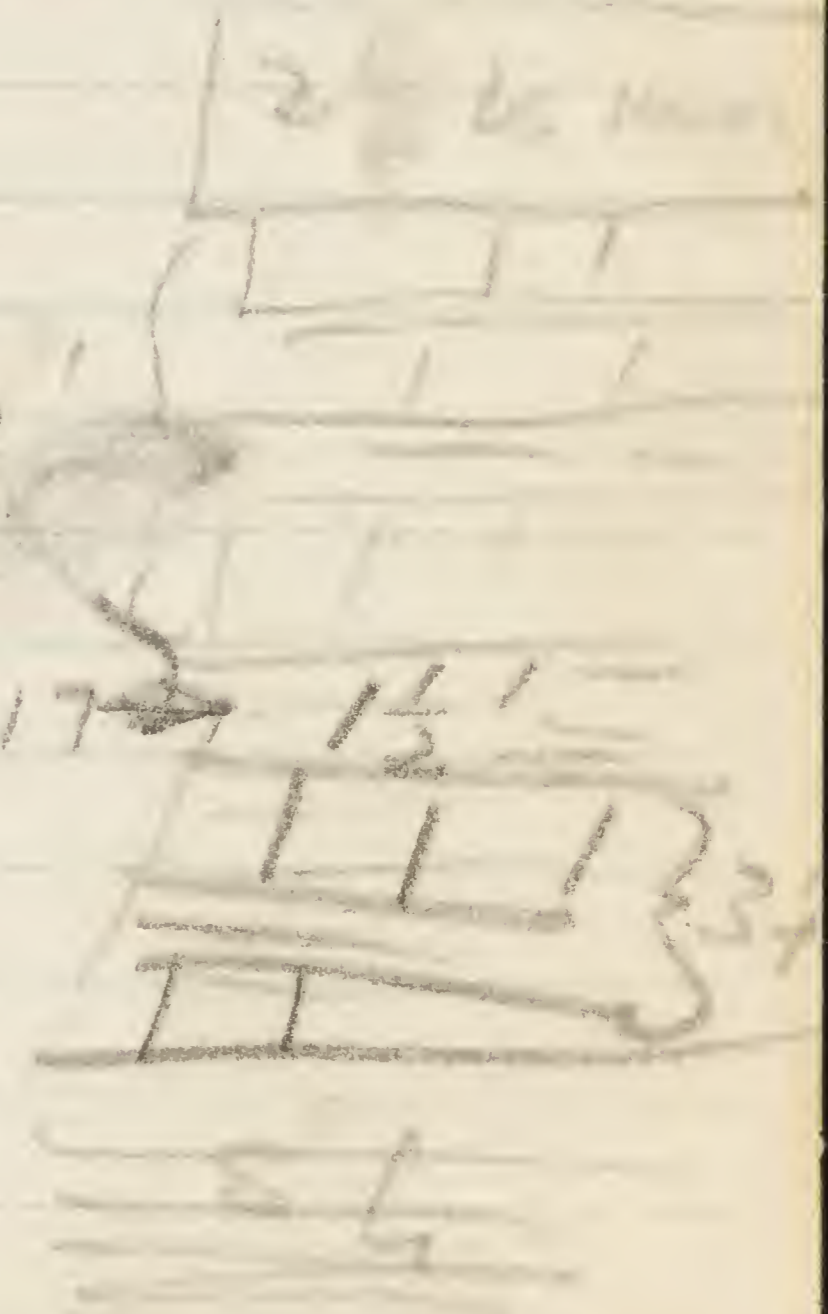
100' by signal 507
new bridge where
power line crosses cut.
E side of cut bed of Cooper
Cooper #5
in June 1938 stop 10. 5-18-16 →



5/18/17

12841

1 1/2' shale below 7'
ls & sh. between
signal & power wires 7'
? Cooper #5
prob. U. clove 5-18-17 → 1 1/2'



NAME

Messard

DATE

May 18, 1954 p. 5

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

Cooper 15 = 0701.55
Brownfield \square NW $\frac{1}{2}$

Stop 11 June 1938

5/16/13

Cooper ^{bed 4} ~~15~~ 5' shale above
9' ls. Messard & family
tunnel of RR cut.

5/18/14

2' shale = Cooper 15
bl. beneath ls lenses
in 2 ft. sandier above
ls, and brown

5/19/15

sh. $\frac{1}{2}$ ' below 5' ls
below Cooper 15.

NAME

DATE

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

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G-2

5/18/7

Sh. above ls. which is 4'±
M. Golconda

5/18/8

Shale immediately above Basal Golc.
(Barlow) ~~ls. - thin shale~~
or shaley ls. (L. Golconda.)
very foss. with
Troostocrinus capitalis,
Pentamerites, brachi.

Golconda go straight
rt at First Baptist Church
signor continue sharp rt
then rd down to RR Track

NAME Golconda

DATE 6-2

0726-82

Brownfield □ E corner
Golconda formation in old quarry
west of RR tracks in SE 1/4, sec. 26, T135
R6E, 3 1/2 miles SE of Waltersburg,
Pope Co.

3 new species

"Middle Golconda" 30'±

"Middle & just below the
middle of M. Golconda

Pterotaxinus capitalis zone

Collect the shale samples.
check sample in Chicago

NAME

G-3

DATE

May 18, 1954 p. 2

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

Top of bluff ss. slumped

5-18-4

Galeonda ls. 2'± clupe from base, near top of Galeonda, slumped ss. on top

5-18-5

clay and mud above

5-18-4 Top sh. of

Galeonda

5-18-6

shale below ls. 20'± below
hard. ss. 200'± NE.

a little lower than 5-18-5

June 17, 38

NAME Goleconda DATE 6-3
U. S. GOVERNMENT PRINTING OFFICE 16-37601-1 Goleconda NW 1/4

0705.90 Goleconda formation presumably
07E05.90 in bluff west bank of Hawk Creek
2 miles north of Waltersburg
Pope Co.

This is "
steep gully down the
bank of the Ohio Riv. 5/8 mi.
E of Rock Quarry School which
is 2 1/2 mi. N of Goleconda
shale in 100' section.

Top 2/3 sec. would = G-1
lower 1/3 of sec. = G-2

Hardinsburg ss. Top of sec.

Stop 18 June 1938

NAME

DATE

May 18, 1954 p. 1.

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

film 5

Renault - 0905.52D
probably M. Renault
or Shetterville

5/18/1
12844

sh. below ls. see Circ. 144
for loc. above ls. in picture
at above pump house

film 5

5/18/1



5/18/2

~~Street Shetterville Quarry~~
Parkinson Quarry at Shetterville

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

5/18/3

P.R. Brown ^{stone Co.} Quarry in St. Genevieve

~~Shetterville~~

sample of Agric. lime on
chert M. St. Gen. or $L\frac{1}{2}$ of
Fredonia

NAME

Renault

DATE

0905.52D

Golconda □
Hardin Co.

Rosie Claire
Flint

Down

Top

LS prob. 20' not exposed 5' 0"

* ^ DK. gray fg.

sampled

shaly toward base



sh. gray, fossilif.

2' 4"

LS. med. gray brown

shaly unevenly laminated

many fossils

1' 6"

sh. gray calc. fossil.

soft.

7"

Circular. 144 p. 130-131

top of 'C' of fig. 8.

also stop 5 June 1938

NAME

DATE

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

May 16, 1954

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

N end of Quarry on Top
Salem Ls., weathered.

Type loc. 7 Geis.

Abdullah Sayyah
phot. 4 $\frac{1}{50}$ f. 35

California G.S.A.

Stop 12. coll. of Pico fm. photo 19
across rd. from coll.
ss. shallow water, x bedded

Stop unmarked (Map. 7 on Pico Canyon
rd. Middle Pico -
beds a little higher than
stop 12. strat.

10-30-2

graded. beds grade into x bedded -> N. side
loc. in oil field

10-30-3

Cliff near Lerric 10-30-2

Jerry Winterer UCLA
for ostr. & for Jim Valentine.
Grace Schubert

Stop 14

10-30-4 near sage Pico fm

10-30-5 clay & sand across
bridge

10-30-6 clay of 10-30-5
deep water

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

stop 16

10/30/81 Sespi rd cut

10/31/11

10/31/11 p. 14 San Miguel oil fm
Pica fm. opposite 31 photg,
leaps sea.

10-31-2 Shell Hartman Ranch #14
M. Pica fm. cut. S. of Well
on Ventura field - forams.
approx same as Turbidite
current loc. of 10/30
600' - 1200' + deep.

Cassidulina cushmani zone
Epistominella pacifica (→)

16007

9-161 a

United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE

(F-389)

Penn of Texas

In charge.

No.

1083

Name

Field:

Adams Branch Is. (Penn)

Determined:

member of Bradford

LOCALITY:

Brown Co., Texas.

Collector:

R. T.

Terriere

Date:

MAR. 11 - 1955

Notebook:

Page:

Memoranda:

M. S. G. fauna list

16007

16007

United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE

In charge.

No. *5/18/6* Name { **Field:**
Determined:

LOCALITY:

Colcanda sh.
Upper 1/2

Collector:

Date: *May 18, 1954*
Notebook:

Page: *2*

Memoranda:

United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE

In charge.

No. *5/19/54* Name { **Field:** *Galcan 02*
Determined:

LOCALITY: *Freyley 15'± above
base
54. 50'± below 5/19/54*

Collector: **Date:** *May 19, 54* **Memoranda:**
Notebook:
Page: *3*

United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE

In charge.

No. 5/19/4	Name {	Field:
		Determined:

LOCALITY: *clay banks*
state in massive L.S.
U. Goleonda

Collector:	Date: <i>May 19, 1954</i>	Memoranda:
	Notebook:	
	Page: <i>3</i>	

GEOLOGICAL SURVEY

SURVEY OF THE

Allan's Ranch

In charge.

No.

8/12/54

Name

Field:

Determined:

LOCALITY:

ls, with siliceous

Collector:

*Gordon
165*

Date:

Aug 12, 54

Notebook:

Page:

Memoranda:

United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE

In charge.

No. *5/18/13* Name { **Field:**
Determined:

LOCALITY:

*5' shale at Cooper 15
Menard = Cooper bed
#4 see June 1938 stop 11*

Collector:

*Sachs
Sch*

Date:

May 18, 1957

Notebook:

Page:

5

Memoranda:

GEOLOGICAL SURVEY

SURVEY OF THE

In charge.

No. <i>8/10/54/</i>	Name {	Field: <i>Chairman shale</i>
		Determined:

LOCALITY: *Bushy hills, shale*
of Gordon call

Collector:
J. S. Schmitt

Date: *Aug 10, 1954*
Notebook:
Page: *1*

Memoranda:

United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE

In charge.

No. 5/18/17	Name {	Field: called Kumpaid but
		Determined: prob. not.

LOCALITY: Sh. below 7' 6025

Collector:

Date: May 18, 54

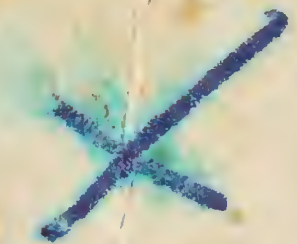
Memoranda:

Notebook:

Page: 6

United States Department of the Interior—GEOLOGICAL SURVEY

SURVEY OF THE



In charge.

No. 5719/11 Name { Field:
Determined:

LOCALITY: sh. below LS = approx
Cooper 1/1

120

Collector: Date: May 19, 54 Memoranda:
Notebook: Page: 5

GEOLOGICAL SURVEY

SURVEY OF THE

In charge.

No. 8/12/3	Name {	Field:
		Determined:

LOCALITY: *pass 65. 5' ± above?*

8/12/4

Collector:	Date: <i>Aug 12, 1957</i>	Memoranda:
	Notebook:	
	Page: <i>1</i>	