<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Work</td>
<td>9:00</td>
</tr>
<tr>
<td>13</td>
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<td>21:00</td>
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<tr>
<td>25</td>
<td>Meeting</td>
<td>22:00</td>
</tr>
</tbody>
</table>
About 7:00 a.m. I started west along the road from Bullet Falls. The temperature was cold, about 50° F. A few squirrels were seen but no other signs of life. I walked for about 1 mile until I reached a fork in the road. I continued straight ahead and followed the road for about 1 mile. I then turned left and followed the road for about 1 mile until I reached a large meadow. I camped near the edge of the meadow and slept on the ground.
The Badlands extend from about 1'
below the 15th step above the calvaria to
the 4th step. There have to the top the rock
characteristics of its aggregate.

Ellenmor and shows a hill just plain
clay and better clay and in at 1360 and
Polidat—Buffalo contact is 25' above it and
at 1285.

Life guilty to authority.

Handwriting had at 1360 A.
1360"—1475" Nickel covered.
1475"~1480"—20th. The general belief
that is for me any of the Torquay shale
is usually a more or less special
measured on date.
1485"~1490"—same but top 2" a little
more massive and soil.

P. globularis
P. globosa
P. globosa
P. globosa
P. globosa
P. globosa
P. globosa
P. globosa
P. globosa
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P. globos
1495'146" - 1500'145" - similar L. gig. limb.

1500'145" - 1525'150" - same shale

1525'150" - 1570'155" - same shale

1570'155" - 1575'160" - same shale

1575'160" - 1580'165" - L. gig. limb

1580'160" - 1590'170" - L. gig. limb

1590'170" - 1595'175" - same shale

1595'175" - 1600'180" - same shale

1600'180" - 1610'185" - same shale

1610'185" - 1620'190" - L. gig. limb

1620'190" - 1630'195" - L. gig. limb

1630'195" - 1645'200" - same shale

similar L. gig. limb.

L. gig. limb

Fusulina

Periplana
At the top of this interval is the
Comm. terregula (small) T. peplana
S congregata T. exigua
P. d. bellus
P. d. boylii
Dr. Emil has supper at this very lunch.

1555. 230"-1555. 210" - At the base is about 21
of dark brown shale which is succeeded by
violet colored shale and is succeeded by
in the upper 5' are.
T. peplana
P. comm. terregula
P. comm. d. bellus
P. d. boylii

Above these Philistinophy whole rock about
of dark brownish shale which also would
refer to the Randalville

This is only as with this small love to go north
which appears as a dull brownish but not
manganese but as a tan
S congregata
P. d. bellus

Coral stones

This exposure is about 15 feet and in
5' bluff the top is about 15 feet, it is 45'
above the 5' of Philistinophy
Coral of Philophy is at 1550'-1555' A.T.
Buchanan Ridge E. of privet Rd.

Hath covered partly by grass. Farm topd of
Crameri
covered

35\textsuperscript{b} arenaceous shale (Bomboy)?

89 covered

Bomboy
Delphi

Road level 1360' A.T.
Reflections on September 15.

Hardin rode at the base of Brown Hall, as correlated with certain facts with it, it may seem, more of the history at the present, of the same. The quiet abundance of farm laborers, hurried to the Hall by a milkman's call, about 8 a.m. a massing, bickering, noisy, thick, dark. In 12 feet this thickness by 5 a.m., this being released by about 60% of the daily call the amount being 50%. They are 50% eliminated by 11 or 12, and only called the amount of it in a current. The milkman's call is correlated to the milk, and the milkman's call is correlated to the milk, and the milkman's call may be correlated to the milk. The form of a milkman's call is correlated to the milkman's call, and the milkman's call may be correlated to the milkman's call, and the milkman's call may be correlated to the milkman's call.
appear at the intersection of the two sections. The rock in this situation is gabbro in some places, in a gabbro-basalt shale which may be about a foot thick. It is also a massive sandstone which has a distinct appearance. I saw a thin bed of it, about 3' across and a bed of no. 3, 1000' thick, near the surface. It is a bed of no. 3. By this time the beds are characteristic of the Ranger, but the presence of the Ranger bed near the surface makes it impossible to distinguish the Ranger beds. The section must belong to the Rassellville formation.
Sept 19.

Hand leveling begun at head interact at 1260
1260' - 1270' 30" concoidal across field to stream
1280' - 1290' 60" smooth adjusted at a few points
of nearly complete an almost level run.

1325' 15" - 1325' 15" 5' on a wall mark. It was
erected by 1st of December as
1325' 15" - 1340' 70". This wall is followed by a
conoidal mark and then 3' of horizontal as
Upper 1' are covered
1340' 70" - 1345' 25" lower 1' concoidal upper
in same dark ground
1345' 25" - 1345' 50" do the like.

Washington
March 20th.

1345' 50" - 1400' 55" all covered but upper 2
ins and a very massive layer of soil is
made by the same. In the lower part of
the bottom leading to 7' then fall a
1345' 55" - 1375' 15" concoidal
1375' 15" - 1380' 20" massive concoidal rock
and a massive as containing the following
fossils.

R. Forminesis
P. Cheilocrinus

1380' 20" - 1385' 125" Fig. 14. in same
condition as above.lying about 1/2 of this
massive rock. Intervals and broad
into absems of a brekting
intervalomr
1385' 125" - 1385' 150" Some crust shell
and Their is nothing in to the hole

this falls.
1395'135" - 1425'165" + 3' — This brings us to the top of the falls and the Chillingham Flat. The bed of the first year was:

1425'165" - 1440'150" - covered.
1440'150" - 1445'185" - a thin, sandy, clayey deposit.
1445'185" - 1455'200" - the same as above

James P. Schellhamer & N. Scott continued to 1465' and showed they are in a bed of fossiliferous clay 10'-15' above the top of the falls across the channel bed. There the flat falls which lead through the strata of shale and thin, bedded, chalky sand that break into thin plate, 16-1/2 inches thick. The channel is 100 yards wide and perpendicular, dusk. The water here is a glistening, bright fishable. It bears a strong resemblance to the Roundball valley in Chillingham.

Fossils seen are:
- Conularia
- Gisela
- G. l. dispar
- Outornavus
- Paralepiss
- Tryoniella
- Hyelepis
- R. cyanulus
- C. corollae
- C. coronatu

Fossils seen at the edge of the valley near:
- P. ornatus
- P. cornutus
Sept 19
Hand boring began at 11 57' AT
1150' - 12 06' 55" - green
1205' - 12 10' 60" - dark arenaceous shale, with
irregular fracture
1215' 10" - 12 17' 65" - same as above
A Porifera C Pumilus
A mollusca C mutabilis
1230' 50" - 12 31' 70" - same for fossils found
1230' 60" - 12 31' 75" - same upper 2' covered
1230' 75" - 12 32' 00" - same in brown bed on south
face another thin interval in a thin gray
sandstone,usted.
Fossil are rare. At 1
and I doubtful if I did a small 2' in a
individual
1230' 80" - 12 31' 90" - covered
1230' 90" - 12 31' 95" - dark gray arenaceous
sandstone, with little shale. Fracture is dark gray
in place of a fossil bed at 68.
1235' 50" - 12 36' 00" - same
1235' 70" - 12 36' 10" - same
1235' 90" - 12 36' 50" - same as above
Frequent the occasional note above. I think the
sandstone is a fossil bed. Fossils are rare.
A Porifera C Pumilus
A mollusca C mutabilis
1255' 165" - 12 58' 105" - about 3' of hard massive
sandstone
1258' 110" - 12 58' 110" - similar shale that
in many and breaks into large round
clasts, is greatly oxidized.
Metacystis

12" 11/10" - 12/10/15" - 6 of heavily-held corals
descend, start split into tiny conchoidal
shells.

12/15" - 12/1/25" - slightly, and occasionally
small, conchoidal

S. penicillus

12/1/25" - 12/1/28" - Posteriorly bitinitis
Can. at the base of the first fall...

12/1/28" - 12/1/35" - Lings to top of 1st fall.

Above the first fall is another small falls

Several fragments in elegant conchoidal
shells.

Fossil at the upper 1/4, etc.

W. connatus
Can. at the base of the first fall.

Can. p. p. الرئيس

Can. sessilis

P. flavus

S. foraminifer

Other fauna: Micropora, Micromya, etc.
The top of the falls is 1/4 of the falls at Palmae.
Palmer's mining, I believe, gives essentially the same section as shown in the tributary gully to Button Falls Brook. This is also seen perhaps not completely in these layers. The top phosphorite beds appear to be about 310' above the top of the Delphi which has been covered everywhere except at Button Falls and across the valley. I cannot place these sections of Palmer's gully and the Button Falls tributary anywhere in my section.
Cliffs just north of gullies behind house
Base at 35 feet above this level of the road, exposure extending for about 55 feet. The top of the cliffs about 1340 feet above the base. The rock is a thin bedded arenaceous shale which gradually becomes heavier bedded and locally above culminating in a hard sandstone rock. Hyassa angusta and P. tallula are common. These cliffs face probably in the same beds as well exposed at Palmer.

Sept 20:

Creek just S of Herbert Fields.
Handaxing begins at about 1145.
1145-205'60"-1 entered
205'60"-171'15"- can't see any animal.
171'15"-1145-75"- got in by digging through shale. Found

W. g. n. 1
E. c. n.
R. H. n.
A. G. n.
12'10'25"-12'15'77"- explanation
12'15'77"-12'20'75"- correct
B. H. n.
A. T. n.

This brings us to the base of a fall 19 feet.
P 30' 25° - 17 35' 90° - sandy rock, hard to tell if a shale or not. Probably marine argillite.
Dolomites, same. Echinodermata.
12 35' 90° - 17 35' 95° - same arenaceous rock, Echinodermata.
Ophiuroidea, Siponomata.
17 40' 95° - 17 40' 100° - same, hard, heavy bedded arenaceous sandstone.
17 44.9' 105° - 17 35' 107° - top of falls, on the last 2' the rock breaks to a massive, black slab, bedded, a beautiful, triangular, thick, split, and difficult to describe.
P 30' 25° - 17 35' 90° - Soft, bluish, grey shale.
Echinodermata.
C. neumayeri (small) P. constans.
P. constans, Productella spinulosa.
17 105° - 12 55° 105° - Shale, becoming sandier and more mottled.
1257' 110" - 1262' 115" - a very large and massive block forms the bed of a second fall, the top of which is 16' above the first falls. The falls itself is about 11' high. On the shelf, persons used about 12" falls on the top of the second fall are:

- *Corythodon* arguta
- *Lepidochitina*
- *Pterodactylites*
- *Rhynchosaurus*
- *Diplodonsaurus*
- *Nodosaurus*
- *Plioceras*
- *Archosaurus*
- *Corythodon*
- *Pterodactylites* (shown on shelf above falls)

Drift below second falls also seen that had large number of shingles. These were not seen in first falls but represent the erosion of the top of the second falls at Bolinas.

1362' 135" - covered with the same shingles seen above the covered interval. Also seen was a bedded shale of the same kind as yielded the Edinviid. Remains seen in these shales are:

- *A. boody* (shown on shelf above falls)
- *P. publctus* (shown on shelf above falls)
About 10' above the base the rock falls into a bedded shale. A north-facing wall of irregular pieces of rock from 10'-12' above the first step, the shale comes to a null.

The following names are:

- H. Fleck
- E. F. Fleck
- E. F. Fleck
- F. Fleck
- E. F. Fleck
- E. F. Fleck
- E. F. Fleck
- E. F. Fleck
- E. F. Fleck
- E. F. Fleck

Blue shale of rock is from about 10' above the base of the falls. The rock is a massive sandy blue-grey arsenocratic shale.

The falls is 27' high which brings us to 11 steps above. The base of the falls is a blue shale which will become well-concentrated with use of the falls. In 10' (about half) above the base of the falls contains four feet of blue shale.

From 32'-43' above the falls the rock is mostly concealed but at 48' and 51' below the rock becomes a hard massive type which may be the Calcareous shale 60' steps above the first approach.
The cross-bedded ripples continued for 40 feet and were seen also for about 150 feet in the sides of the gully.

Sept 20th

The exposures show this cross-bedded strata, very few fossils were seen here but the following occur:

Flexocrinus
Sagitta
E. aggregata
P. brachyura
I. inmarginata
I. umbonata

I believe that this exposure is in the Lindonville and half the 24 seem near the head of the gull, approximately Calypso and Pole. The content of the 24 east of, and the Lindonville which came in somewhere near the 1874' entries.
Sept 21

Ovid Shale. Fossils occur between the first bridge near the main road and the crossing with the cabin road. P. muta, C. terminatus, R. monart, C. antiquus, N. helocitata, A. acuminata, A. monartata

At 11:50 (1) A.M. we had seen the base fauna of the following fossils - M. concentrica, P. ovata, T. armata, N. helocitata, R. armata, A. acuminata, T. truncata, H. loti, A. spinifera. The A. spinifera were seen about 30' above the level of the first bridge, and the level of the cabin was a few hundred feet higher. The rock is a hard gray calcite.
The bed, with the Ypresian, was slightly harder. The shale above the \textit{Sphenobaena} bed is somewhat darker and less sandy. That is the shale of the \textit{Ophiomorpha} zone. The last \textit{Ophiomorpha} discus bed shows that the small sills just upstream from the red ridge should be looked for at the top of the small sills of stage 5. The \textit{Sphenobaena} zone was about 10” above the level of that dam, making for the accumulation and about 14”, actually about 10 below the pier, a very land. In fact, much younger to the top of the small sills.

Fossils in the \textit{Ophiomorpha} zone are:

<table>
<thead>
<tr>
<th>Family</th>
<th>Genus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echinoidae</td>
<td>\textit{Echinoida}</td>
</tr>
<tr>
<td>Asteroidea</td>
<td>\textit{Asteroidea}</td>
</tr>
<tr>
<td>Ophiomorpha</td>
<td>\textit{Ophiomorpha}</td>
</tr>
<tr>
<td>Ypresia</td>
<td>\textit{Ypresia}</td>
</tr>
<tr>
<td>\textit{B. granulosa}</td>
<td>\textit{B. granulosa}</td>
</tr>
<tr>
<td>\textit{B. sparesana}</td>
<td>\textit{B. sparesana}</td>
</tr>
</tbody>
</table>

30’ above the intersection of the two handles of the creek at about 12:37, 32’ above the creek, and at about 12:42, 32’ above the creek. The shale becomes softer and somewhat different fossils occur:

<table>
<thead>
<tr>
<th>Family</th>
<th>Genus</th>
</tr>
</thead>
<tbody>
<tr>
<td>\textit{Ophiomorpha}</td>
<td>\textit{Ophiomorpha}</td>
</tr>
<tr>
<td>\textit{Y. postulaxa}</td>
<td>\textit{Y. postulaxa}</td>
</tr>
<tr>
<td>\textit{P. carinata}</td>
<td>\textit{P. carinata}</td>
</tr>
<tr>
<td>\textit{P. belliata}</td>
<td>\textit{P. belliata}</td>
</tr>
</tbody>
</table>

\[12:37\]
\[12:43\]
\[12:37\]
\[12:43\]
Reflection on the day - The west slope exposures showed at the base about 15 ft of red of the 'Modella pumiceous' zone, then followed about 14 ft of black, brownish to dark. This other was slightly shaded and less crevaceous than the layers to follow, all the thin sandstone beds were not uncommon. A preeomain was restricted to about 6 ft at the bottom. The final pumice zone is followed by about 45 ft by black, pumiceous sand and silt, containing a reticulum. This is followed by 16 of softer, darker arenaceous sand. Characteristic in the middle is quartzite. Forries are not abundant in the 'Vitulina' zone and become less as toward the top. The upper 10' of 'Vitulina' is very sandy, Paralel fossils rare, but had some...
Fossils in the Spinius-Atupsa zone from the branch intersection to the contact with the Vitulina zone:

- A. Granuloa
- B. Coloptoceras
- C. Palaeologus
- D. Archimedes
- E. Echinacea
- F. Syringoceras
- G. Paraceras
- H. Palaeologus
- I. Palaeolabium
- J. Palaeolabium
- K. Palaeolabium
- L. Polyedron
- M. Polyedron
- N. Polyedron
- O. Polyedron
- P. Polyedron
- Q. Polyedron
- R. Polyedron
- S. Polyedron
- T. Polyedron
- U. Polyedron
- V. Polyedron
- W. Polyedron
- X. Polyedron
- Y. Polyedron
- Z. Polyedron

The coral had come about 25' above the stream intersections and forms the top of the Spinius-Atupsa zone as 5' above the chalk halls & Tullis &b bellastones were seen.

abundance & tellins. The sherdum can be readily distinguished from the Hamilton by its dark brown and platy sands. The Hamilton being compact & massive.

The upper part of the Spinius-Atupsa zone was in very coarse rockst that broke into heavy lumps. Much of the stone of the Vitulina zone is a double arenaceous shale breaking into thick lumps.
Glen 1/4 miles SSE of Leonardville, on east side Harquilla Valley

Sept. 22.

Hand leveling begins at 12:25 AM.

13° 41' 98" - 13° 40' 95" - small patch of arenaceous shale containing gastropods.

13° 40' 85" - 13° 40' 115" - mostly arenaceous, small 3'-5' experience of thin interval and extending down in it by 3', is arenaceous shale in 3 zones abounding in Congregata and Aulacista. This is the top of the Rockport and is exposed at about 13° 56' AM.

On top of the Rockport is a 1'-2" of very hard shale, don't recall at all of any fossiliferous, having the following species:

- Concentrata
- Pedisulina
- Siphonina
- Bulimina
- Peneroplis
- Elphidium
- Elphissella
- Angulina
- Conuspira
- Textularia
- Punctata
- Agnostus
- Grandula
- Conchicula
- Conchicula Congregata

The following fossils were seen in:

- Alboconica
- Alboconica
- Conchicula
- Terebratula
- Conchicula
- Bulimina
- Bulimina
- Conchicula
- Elphidium
- Elphidium
- Alboconica
- Alboconica
- Alboconica
48' limestone shale and cross-bedded

70' covered

65' soft dolomitic limestone

2' limestone shale

9 1/2' Doolitt 78° (2)

Deevoport 2'
The lowest 20 cm. interval is very soft
argillaceous shale or is partially
softened by small drops of water and
A peculiarities. There is the possibility
to limit 70 cm. will be on some basis
1' from the base
1335' - 1375' 25''
17' above the top of the Parkport
falling in various dates.

I. silurian
2. devonian
3. carboniferous
A. cambro-

A. foraminifera

Rock well in sand and silt, 
middens in large thin layers.

1375' 25'' - 1415' 25'' - 3'' marine shale
up to dark gray. For the 25'' it is
like the deposits but much in layers.
Dolphi fossils. The upper part of the
is not exposed. The upper part of the
first coal 145' - 70'. Think the face
is 25'.

P. britannicus
D. hyptima

P. crassus
P. corrigens

P. inflatus
P. rogersi
P. principia
P. pugnosa
P. caudata
P. erectus

1415' 25'' - 1420' 70'' - 3' up in the.
step

Three layers from 0 to 5 cm.

This is the height of the

Erosion begins in the 2'.
Loma c. E. -
C. -
A. -
M. -
H. -
A. -
M. -
H. -
A. -
M. -
H. -
5' s.
1440' 90" - 1460' 100" - falls. J. lamar - 11" scree. Passed and fell. Heavy bedded co. -
1460' 100" - 1470' 120" - covered.
1470' 120" - 1475' 175" - covered.
1475' 175" - 1535' 195" - dark annular calcite.
1535' 195" - 1545' 195" -
1545' 195" - 1575' 225" -
M. -
N. -
L. -
N. -
A. -
A. -
A. -
702
702
The very top rock is in a massed and jumbled condition along the edges of the gully as are the rocks near the hillside.
Life story. Footprints upstream.

Noto 110°, 110°, 115°, 115° - scoured.


In side gullies, opposite houses. Trees about 110°. 120°, 120° - scoured. Deep cavities in flood. Fades to gullies. Trees and shrubs along the small streams. Flooded.

Exposure. -

Lowest rock exposed in this gully belong to the lower part of the Delphic. Above the 110°, 110°, 115°, 115° - scoured. Deep cavities in flood. Fades to gullies. Trees and shrubs along the small streams. Flooded.
just above the top of the Pedasport Mt. ledge, but in rather small form is very common and is an expedient place for collecting this species, or it so notably everywhere 125 above the top of the Pedaspot in the stream that rock is covered it comes 55' of rock
Tabulaloc natural into lumps. Above this, the rock is exposed for fully 50' and is followed by an even grey shale showing a few skulls characteristic of the 'helgalei' but also some of the lower Pompey. This may be a new
member of 'paleo'. Above this layer is dark grey amberacer shale abounding in fossils like those of the lower Pompey Mt. Payne St. This Shale passes upward into a sandy shale and go. But the above dry's falls the rock is covered for a considerable interval (65') and then cross-beded sandstone and sandy shale comes in which is at the head of the gull and on the side hill south of the
Gull and can be followed into the gull's ravine along the summit lake road where Tabulaloc appears at about 1650' A.T. a short distant upstream typical Pompeyville shale occurs. In this gully the Pholidotaclis atrata found was not seen and the rest of contact with the land rock at the top of the first falls at
Palmer's falls and most seen, at still do not recognize any Pompey beds, but if believed the valley I believe the rocks forming the signal falls at Palmer's can be from the top of the first
falls at Palmer to the Ednaic horizon belongs in the Randolphville group contains Vitalinia and is probably the lower black shale perhaps that between the upper Pampa and the sandy beds in the falls at Port glen. This correlation may not be exact but is suggestive.
Sept 22 - rain
Sept 24
Gully in S. Colusa

Handcapping began at 1140' N.
1140' - 1405' 255' - condensed.
1405' 265' - 1410' 265' - thin, sandy, shaly.
Later, some tufa seen here.
Acuanota
C. oteritae
C. semigraecae
1410' 275' - 1445' 275' - same.
D. carinata
J. semigraecae
N. pertusa
N. californica
R. frugifer
R. tenuis
R. fruticosus
R. arenosa
R. tenuis
1420' 280' - 1425' 285' - rock, deep, sandy, shaly.
C. arenosa
C. carinata
C. semigraecae
1430' 290' - 1435' 295' - rock, shaly.
P. arenosa
1435' 305' - 1440' 325' - same,
P. arenosa
1445' 325' - 1450' 337' - same, near the"
1490' 35" - 1495' 355" - rock and gravelly sandstone. P. Horse, C. barnum

1500' 355" - 1520' 380" - coarse shaley sandstone

1520' 380" - 1570' 400" - granite bedrock exposed intermittently
Sept. 24

Handdrilling began about 1230 AM.


13:37' 120" - 13:40' 120" - The bore. The interval is a 1/4" fine calcite - aerenchyma

13:45' 115" - 13:55' 120" - At the base, thin calcite - aerenchyma

14:15' 110" - 14:30' 120" - The base. Thin calcite - aerenchyma

14:37' 120" - 14:40' 120" - The base. Thin calcite - aerenchyma

14:45' 120" - 14:50' 120" - No more calcite.

14:55' 120" - 15:00' 120" - No more calcite.

15:05' 120" - 15:10' 120" - No more calcite.

15:15' 120" - 15:20' 120" - No more calcite.

15:25' 120" - 15:30' 120" - No more calcite.

15:35' 120" - 15:40' 120" - No more calcite.

15:45' 120" - 15:50' 120" - No more calcite.

15:55' 120" - 16:00' 120" - No more calcite.

16:05' 120" - 16:10' 120" - No more calcite.

16:15' 120" - 16:20' 120" - No more calcite.

16:25' 120" - 16:30' 120" - No more calcite.

16:35' 120" - 16:40' 120" - No more calcite.

16:45' 120" - 16:50' 120" - No more calcite.

16:55' 120" - 17:00' 120" - No more calcite.

17:05' 120" - 17:10' 120" - No more calcite.

17:15' 120" - 17:20' 120" - No more calcite.

17:25' 120" - 17:30' 120" - No more calcite.

17:35' 120" - 17:40' 120" - No more calcite.

17:45' 120" - 17:50' 120" - No more calcite.

17:55' 120" - 18:00' 120" - No more calcite.

18:05' 120" - 18:10' 120" - No more calcite.

18:15' 120" - 18:20' 120" - No more calcite.

18:25' 120" - 18:30' 120" - No more calcite.

18:35' 120" - 18:40' 120" - No more calcite.

18:45' 120" - 18:50' 120" - No more calcite.

18:55' 120" - 19:00' 120" - No more calcite.

19:05' 120" - 19:10' 120" - No more calcite.

19:15' 120" - 19:20' 120" - No more calcite.

19:25' 120" - 19:30' 120" - No more calcite.

19:35' 120" - 19:40' 120" - No more calcite.

19:45' 120" - 19:50' 120" - No more calcite.

19:55' 120" - 20:00' 120" - No more calcite.

20:05' 120" - 20:10' 120" - No more calcite.

20:15' 120" - 20:20' 120" - No more calcite.

20:25' 120" - 20:30' 120" - No more calcite.

20:35' 120" - 20:40' 120" - No more calcite.

20:45' 120" - 20:50' 120" - No more calcite.

20:55' 120" - 21:00' 120" - No more calcite.

21:05' 120" - 21:10' 120" - No more calcite.

21:15' 120" - 21:20' 120" - No more calcite.

21:25' 120" - 21:30' 120" - No more calcite.

21:35' 120" - 21:40' 120" - No more calcite.

21:45' 120" - 21:50' 120" - No more calcite.

21:55' 120" - 22:00' 120" - No more calcite.

22:05' 120" - 22:10' 120" - No more calcite.

22:15' 120" - 22:20' 120" - No more calcite.

22:25' 120" - 22:30' 120" - No more calcite.

22:35' 120" - 22:40' 120" - No more calcite.

22:45' 120" - 22:50' 120" - No more calcite.

22:55' 120" - 23:00' 120" - No more calcite.

23:05' 120" - 23:10' 120" - No more calcite.

23:15' 120" - 23:20' 120" - No more calcite.

23:25' 120" - 23:30' 120" - No more calcite.

23:35' 120" - 23:40' 120" - No more calcite.

23:45' 120" - 23:50' 120" - No more calcite.

23:55' 120" - 24:00' 120" - No more calcite.
Sept 24th

Undoubted Cheneirena comes at 1906' AT

Between it and the highest Hamilton

Cheneirena at about 2' of living as before

The lower bed of F as described above

The size of an in. (or mm.) 10:1 follow

The Hamilton 1' under a was

The V at the - 8' tunnels below

3' where it takes for the Cheneirena for

with a kind and layer having some bed

containing fossils. The shale of the

Potential bed in 5' off the upper in less

cm was found to be leaf as the Cheneirena

2' below the small body of the Cheneirena

32' below the small body of the Cheneirena

Pterodactyls

1. lamina

2. spiniferida

3. perigee

4. capillana

Dinosaurs seen above this layer are

2. quagga

3. lamina
Sept 24

Ludorina

Coccoid 12

2,2" U. pseudonana - S. tellus

ι\frac{9}{16}

Διπλοζώνμενα - Atypical zone

\frac{9}{12} Lema

\frac{4}{12} covered

\frac{29}{12} ("aggregate")

120 φ
trails above this S. laura zone:
E. crotatum
P. corymbosa
R. spinifolia
R. andacola

The first S. laura was seen 79 feet below the notch. The next 30 feet to the
upper C. corymbosa fell might consider as transition. Below the rock ledges
at the notch the stone is covered for 4 feet where no. appears nearly
to 7 1/2, where no. appears nearly
this high. For the C. corymbosa there
is about 7 1/2 3' transition for about
9'. The family seen occur in the
upper 5' of transition or about
3 1/2 feet above the 7 1/2 feet below
the S. laura beds are:
Sept 24th
Blonde, arenaceous, shale, on both sides of highway bridge. In places weathered purple like mica by the Missouri.
G. arenatus

On cliffs 55' above, Sept 24th were seen
3 inches H. delis
Muntibiles
G. arenatus
C. striatus

Sept 24th
Falls 10' high behind S. L. B. Read's.
Rock conglomerate gray, blue, grey, quartz and purple. Fossils are:
Mactra
G. denticula
S. telluria

Small black quarters, rock forms platten stream for long distance.
Hand leveling begun at 11:34.
11:34' - 12:34' 52" = covered.
3" at the level strip instead of the top of the bench mark at 12:39' 15".
12:34' 50" - 12:48' 36"
12:49' 45" - 12:54' 16"

Boothii
B. albofasciata

Sedimentary rock is colored in the quarry, as far as the last house at 13:48'. Above the elevation on this house 13:10'. The bench may be detected. The top of the Delphi almost appears at about 13:09'.

Rocks are found in this area as far as the last house at 13:48'. Above this house 13:10'. The bench may be detected. The top of the Delphi almost appears at about 13:09'.

Algae are found in the upper part of the rock. Fossils in the upper part of the rock.
The top of this exposure is 60' above the base of the fine house along the road or at 1100' A.T. According to the ground-level it would be 1420' but this was not

Above this exposure comes another 50' of caliche overlain by, having fossil as follows:

- V. distans
- Deinornithomys aequonotinus
- Leptocleidus
- Propleurophodon
- Protorhyus

This caliche is some 60' thick and is seen on the road and also lenses along the road. The caliche is at 1420' above it ends the soft Randallville shale exposed along the road (1474')
Sept 25

First gully on E side hollow on New Berlin vein.
Handielling began at 1210.
1210' - 1260' - covered
1260' - 1270' 60" - arenaceous, thin bedded
that break into thin flat slabs, clearly the
Randallville.
1270' 60" - 1280' 70" - same, thin bedded, purple
pillow, part of white wear, this any dark.
1280' 70" - 1285' 75" - rest 5' of falls.
1285' 75" - 1290' 80" - Fine yellow shale
similar to below but not so flat in
structure.

<table>
<thead>
<tr>
<th>Abbeville</th>
<th>C. Congregata</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. boydii</td>
<td>C. gilsonii</td>
</tr>
<tr>
<td>H. conuta</td>
<td>C. congesta</td>
</tr>
<tr>
<td>P. American</td>
<td>C. inconspicua</td>
</tr>
</tbody>
</table>

1270' 80" - 1280' 90" - same shale, less flat
structure, more like the lower gypsum
stuff. No fossils in this interval.

1305' 90" - 1305' 95" - top of falls, same rock,
more or less layer.
1305' 95" - 1310' 60" - mostly thin bedded or
About 5' of new, this interval in a thick
bedded area, many C. congratata.

1320' 100" - 1330' 70" - Dark grey arenaceous
shale & thin bedded, thin alternating
fossils are very rare.

Curved stems 1
1329' 70" - 1335' 25" - same C. congratata

And from 1370' 110" - 1383' 160" is a
case.
1335'125" - 1340'170" - covered
1340'130" - 1345'135" - mostly covered top
7' in thin arenaceous shale
1345'135" - 1350'140" - thin arenaceous shale
fossils abundant. Range of top 2' of last
step end of this step. Interior-
Sept. 25
A. sandacula
B. aculeata
C. pennisetum
C. crassum
F. proplinea
G. badeinata
H. carinata
1352'140" - 1355'145" - mostly thin-beded up
1355'145" - 1365'155" - quiter thin sandy
cross-beded up
1365'155" - 1370'160" - mostly covered but
a few pockets of raw were noted
1370'165" - 1380'170" - thin cross-beded,
then banded up
G. proplinea
Sept. 25-

Confere arenaceous shale on northwest
as having few fossils, the only form
noted being 2 Lamellibranchia. The top
of this rock is at about 1150' and is believe
to near the top of the Pompey[?]
Sept 25th.

Ledge 45 steps above upper river bridge.

On September 25th the Buckstaff came at 12:37 A.M. and was followed by a hole of the Delphi but from there to 9:30 above the 4th house while it covered. Below it above this house 40' of rocks are exposed & culminating at 31' 14' 7' in calciferous arenaceous rocks abounding in L. pellucida, P. cornus, and also having L. punctata. 60' above this appearance of at 14' 7' comes indubitable Kendallville Shale.

Bully at Sept 25' is apparently all in the Kendallville Shale.

Ledge above the Buckstaff Point was 260' N of above the bridge at 11:15. Going at 7:00 for this Monday. The ledge is clear, but the top older than expected, thought could not be located.
Sept 27

Cuss Bank (C)

Banking began at 1200.

180' - 1280' 10" covered.

1280' 10" - 1290' 20" - mark beginning of position 1.

1290' 20" - 1290' 25" - light gray sandstone. 1.5 for 1.0.

1290' 25" - 1300' 25" - challenging until at the top.

1300' 25" - 1300' 50" - cross-bedded sandstone.

Pseudosol

1300' 50" - 1300' 75" - cross-bedded sandstone.

1300' 75" - 1300' 100" - cross-bedded sandstone.

Ripple marks at 1300' 100" - the top of the sandstone belongs to the limestone.

Ripple marks at 1310' 20" - the top of the sandstone belongs to the limestone.

1310' 20" - 1320' 20" - zone rocks are still.

1320' 20" - 1350' 20" - falls about 15'.
Fossils of a very hard fucoidal type.

120' 40" - 1240' 60" - Sailing about to run aground.
1240' 60" - 1250' 70" - Sank slightly.
1250' 70" - 1270' 20" - Encumbered in hold deck.
1270' 20" - 1270' 30" - Encumbered in hold deck.
1270' 30" - 1270' 45" - Towed in time but
1270' 45" - 1315' 30" - Carried in the hold light gun
1315' 30" - 1315' 35" - Carried in the hold, upper
1315' 35" - 1320' 15" - Thin fluted de sponge
1320' 15" - 1325' 50" - Congregate.
P. flabellum.

Apparent that we are still in the

Bactridinae. Congregate.
C. congregate  
T. echinata  
C. undulate  
C. tenuistriga

1390' 210° - 1405' 135° - covered. The rocks at 1390' 210° resembled some calcareous sandstone layer covered by a thin layer of mudd. The cliff at 1390' 210° was covered with a shell-finsed. A pocket with many sea shells was found just under the surface.
Sept 27

Handedling Pegmen at 1120

12:00'30" - 12:10'30" - same clays as
Diamictite

12:10'30" - 12:15'30" - same

12:15'30" - 12:20'30" - the dark grey annacar

12:20'30" - 12:25'30" - the same annacar

12:25'30" - 12:30'30" - same - on sandstones

12:30'30" - 12:35'30" - same shales - on slates

12:35'30" - 12:40'30" - same - on sandstones

12:40'30" - 12:45'30" - slates - on shales

12:45'30" - 12:50'30" - the bedded slates are

12:50'30" - 12:55'30" - the bedded slates are

12:55'30" - 13:00'30" - same - on bedded slates

13:00'30" - 13:30'30" - same - on bedded slates

The beds in the bottom of this gully

appear to me to be the same as those
from 13:30'15" to the end of the gully,
in Sept 27. Here were bluish grey shales
passing upwards into thin beds of light
colours forming into ? c. congesta
and 2. conglomerate, which may mark the

top of the conglomerate.
Dec. 22, cont'd

1235' 80" - 1260' 70" - same thin bedding as above
1260' 90" - 1265' 95" - same thin bedding as above

- heavy-beded shale
- fossiliferous
- Calyptraea
- C. bellissima
- O. undulata
- P. ventricosa

1264' 55" - 1269' 100" - very common O. undulata, C. bellissima, O. undulata, P. ventricosa

1266' 73" - covered with clay and fossils not abundant

1267' 100" - 1270' 100" - common fossils:
- Ammonites
- Osteoderma
- O. tetradactyla

1275' 100" - 1280' 120" - abundant fossils

1280' 110" - 1285' 115" - clay at

- Tetralites
- E. diornus
- C. bellissima
- O. undulata

1285' 110" - 1290' 110" - shale common here
1290'-170" - 1295'-25" - cross-bored in
1295'-120" - cross-bored in for
lower 3' H. upper 7% main 8'0" extending up 7'7" main 7'0" J. walls.
C.Industries
C. Congregata
C. Dombasle
C. F. Inc. lea
1300'-120" - 1305'-125" - p ave on level at
bottom feet but covered west of way.

Legs 24

edge above P. P about 2'8" in front of
3' corners. Bottom of the 3'8" above
road 3' thick, 6' above 3'8" to map with
occurs with:

8' thick

This makes the U. pretentious larger - 206'
+6' on 212' above the road. Add to this about
8'5' for intended to hang of the house
hence 0.3' thick, is about 213' above about
232' above road. Thickness of
Mooran is about 251' think + about
10' dip on P. P. = 261' think.
275 pieces of bridge.

58
32
128
230
The shale exposed above the thin, cross-beded sandstones and abounding in \textit{E. ceratina} is considered to be the same as that band abounding in this fossil in the first gully on the east side of the valley north of South Edmeston. The shale above this bed is not very fossiliferous but is characterized by \textit{C. undulata}. I believe all of this stone in this gully is Tullowville in age. The shale becomes in the two gullies. Drift seres as datum planes. I believe that the Tullowville-Argileclies comes in the 58' interval between the thin \textit{C}. with \textit{I}. laurea and the first bluish grey Shales above them.
Sept. 30

"At 1350' AT

125" - 1150'100" - covered

1450'100" - 1452'100" - 2' thick, gray, about 2' of

1452'100" - 1457'100" - marine band grays

1457'100" - 1462'100" - marine bands, some white,

1462'100" - 1466'100" - marine bands

The shale in this interval is grey colored and has

been broken into rounded boulders that are commonly about twice as large as the

rest of a roughly equidimensional fragment.

1457'100" - 1459'110" - soft sand at

base, breaks into flat A piece like the

Reddellville

1459'110" - 1462'100" - same - no fossils

1462'100" - 1466'100" - same again,

with some rounded shale. The

shale is before

Expalistas

1471'125" - 1477'125" - same as

Gono. M. fragilis, Ophiomorpha

1477'125" - 1481'125" - same

Opilius form. small

Reliefosella of M. pygmaea

1481'125" - 1487'125" - matrix - covered

1487'125" - 1493'125" - matrix - covered
12' 87 1/16" - 12' 93 1/16" - Some
12' 97 1/16" - 12' 97 1/16" - rock examined

common
O. pedata
A. rugosata

12' 97 1/16" - 15' 02 1/16" - phosphate analysis
15' 02 1/16" - 15' 11 1/16" - same as previous

common end of stop. 1 coat
O. pedata
A. rugosata

Common
If the upper is the rock in the upper is the rock in the
common was examined and at the
top is again the common was examined and at the
rock was found to be 100% naturally Pure
water. This was marked the top of
the Peck point. We got definitely this
as the Peck point.

This rock is in the middle part
of the Pompano number as interpreted.
Sept 30

Handkerchief spring at 1460' AT
1400' - 1400' - 1500' - 1600' - 1450' - 1500' - 1450' - 1500' - 1450' - 1500' - 1450' - 1500'
R. Buxendarl. and L. H. Buxendarl. plant.
Buxendarl. plant. Holley.

1450' - 1500' - dark gray annular al. at.
350' - 400' - more dense at.
1490' - 1525' - some al. more loosely

P. ascendens
C. rosid atens

1525' - 1570' - heavy-rolled sand

P. hiata
C. pinnatus
S. annularis
1515' - 1525' - common - abundant
R. membranacea
P. oblonga
C. pallida
P. prolixus
D. annulata

1525' - 1570' - common - rich 244'

1520' - 1570' - same calcare.

P. annua
P. pallida
P. pustulosa
C. munsonensis  Ottotheca sp
S. pennatus  P. angulata
R. connexi  E. oblonga
Cyclonema linota  A. bilobus
A. umbonata  P. philberti
F. cummingi  M. angusta
B. macrasta  C. aequiloba

1535'65"-1530'70" Irregularly banded sand
shale with calcite anhydrite dikes
Open stromatolites  P. philberti
Phytophyllina sp.
C. stromatolites  R. connexi
F. linota
At the top of this interval the lithology
of the middle changes to a soft shale

1530'70"-1535'75" Dark grey arenaceous
shale, breaking into thin slabs
C. stromatolites  P. philberti
S. pennatus  E. oblonga
C. cummingi  C. aequiloba
At the top of the interval the shale
splits into thin flat pieces

1535'75"-1540'80" Some soft arenaceous
shale  P. philberti
C. stromatolites has apparently disappeared

1540'80"-1550'73" Pale soft shale becomes
continually harder and the paper is not
able to be torn along the grain. This marks the
end of a large gully and the beginning of
a large fossil limestone bed. A
Platycerium

1557'9" - 155'195" - same
rest of grill covered

Incorrect as lower part of valley and should be giving showing
longer = 33' south of it


Handkerchief on stem at 12.00.

135'1" - 124'9'15" - covered.
124'9'15" - 125'9'25" - soft, amrasma on the
top same as at the contact at 15'30'30"

E. erecta
Campanula

135'9'25" - 136'9'35" - No rock becomes more
amrasma and finally a star chionodoxa

R. flabellum
Wandeta
P. cirrus
E. caeschirum
P. ismae mortensii
P. granulosa

136'9'35" - 127'4'40"

R. flabellum
P. cirrus
E. caeschirum
P. ismae mortensii
P. ismae mortensii

Sept. 26. Opposite R.S. Wells. - 33' south of it

About 13'7'7'47'
1324'40" - 1404'70" - covered
1404'70" - 1414'50" - thin breccia, ground
Randallsville sh.
1414'50" - 1421'70" - appearance of flat, thick slabs
1421'70" - 1423'80" - A. carinata
1423'80" - 1434'10" - same bounding sand with considerable thin flat slaty plate about 1/4" thick
1434'10" - 1439'15" - sandstone interbedded with sandstone and breccia
1439'15" - 1441'110" - same with cross-beded sand
1441'110" - 1449'35" - covered
1449'35" - 1474'170" - heavy-beded sand. Fossils
1474'170" - 1479'20" - mollusks
1479'20" - 1489'155" - covered - one small patch cross-beded sand.

...He had crossed here in the lower 250 feet and from the Randallsville and the Congey in contact with the Congey is covered by 30" of debris. The Randallsville is exposed at intervals in the gullies...
Oct 1.

Edge of exposed shale. Was a large
Both a coarse and fine

Pentama

Campanites Carapect

This large a pebble in lowerannel
and the height of about 1420 at the top. The
depth about 15' height.

Oct 1

Campbell Brook of a map

Camperren track

The Meander I began at 1150' A.T.
1150' - 1155' 25' cleared
1155' - 1160' 30' on necessary plate for
having the following fossil at the

P. Palteneri = C. concurricus
C. anonicus C. anonicus
C. phyllactes C. phyllactes
C. phyllactes C. phyllactes

1160' - 1165' isolated on. Another
deposited on possible also the level
of the swale, the latter amounting to
about 2'. Here were seen

C. concurricus C. concurricus
C. carolinus C. carolinus
C. anonicus C. anonicus

All of this rock is referred to the

1165' - 1235' 25' cleared. At this top

is about 3' of recent coquina cement.

C. concurricus C. concurricus
C. complanata C. complanata
C. complanata C. complanata
E. cinnamatus
Sp. pennatus
C. bellistrata
1235' 25" - 1260' 110" - covered
1260' 110" - 1270' 120" - thin or anemoneal
A. undulata

Oct 1st
Sp. cinnamatus
C. bellistrata
1280' - 1300'

Oct 13th
C. bellistrata
C. cinnamatus
1570' - 1600' - Virginian
Oct 1st

Upper part of Gouldi, ruined

Handdwellings begins at very fudge of fall.
0'-10'-12'-14' - North, grey, dark, coarse shale.
10'-12' - 20'-25' - coarse, coarse gravel.
W. mammatisum - B. petalurum
E. caecago - E. nemastes (small).
20'-25' - 20'-25' - upper 3' covered. Line 2-1/2' wide.

P. coeloceras - T. ingens
Monoceras
2'-2'-5' - gray, 20' gray, mostly covered. Upper 3' covered.

M. conchacea - M. costatum
3'-5' - 3'-5' - covered.
14'-18'-14'-18' - lower 2' covered. Upper 2' covered.

M. costatum - M. cohervens
4'-5' - 4'-5' - covered.
3'-5' covered. Ungul. - On ramped on apples being thrown, giving an overall scuffed appearance.

5'-6' - 5'-6' - more red, flatly on ramp.

C. coeca - C. macrurum
E. chromatic - E. petalurum
G. coeca - G. chlorophyllum
S. coeca - S. chlorophyllum

80'10" - 85'8.5" - more. About 8' above.
This is a 15-12' ledge of sandstone, which
This is actually the base of the dome.
Oct. 15
South Brookfield

Approximately 1/10 of heavy blanket
and thinking of hawthorn, a gulf of heavy
plot, as it were. It's like a bottle of wine

might have a message in it, a crumpled,

Bateson

rocky
remnants.

The ground is blanketed with snow in places,
especially that part of the old house. The
straw and twigs are bright gold brown,
the trees grand. It's like the last days of

I had to jump from the third floor at first,
and held the little boy in the gulf

and worst north of Brookfield.
Oct. 30.

Property of L. Button.

185-1875 10".

175'10" - 180'15" - thick, massive, concretion with quite an abundance of fossiliferous concretion. C. constricta, E. costae.

180'15" - 185'20" - mainly clayey but with almost half near the top of soft clayey chalk that passes into firm chalk to a depth of 15 ft. all contain above the top layers on this chalk some fossils with Echinoceras abundant. The transition very evenly from the soft chalk to the firm chalk has some resemblance of that in the Purbeck Clay. Fossils in the transitionary chalk:

- G. prinsepii
- G. capillata
- G. bicarinata
- G. semivacuolata
- G. toxodontes
- G. constricta
- Echinoceras
- E. angulolabrida
- M. trigonatum
- M. costatum
- M. costatum
- M. costatum
- M. costatum
- V. costatum
- V. costatum
- V. costatum
- V. costatum
- V. costatum
- V. costatum
- V. costatum
- V. costatum
1145' 20"—1190' 25"—mostly a section of soft shale with some 20 beds which usually cause cascades along the upper side (6-7 in top) of the No. 21 hole in the preceding interval.

1190' 25"—1225' 30"—same shale with:

- C. concinna
- P. pectinatula
- V. obtusata
- V. Pal. palatana
- P. ferruginis

These shale rest on about 2' of cemented shaly sand and concave shale and make up the first section high fall. The fauna above and any to fall to can be used for the whole fall, the bony fish shale in blue grey and section passing and quite rest. Also the Earnville horizon.

As one passes up the fall, the rock becomes sandstone 1115-1" above the fall the rock is again a shaly sandstone. Still falls against 10' 60" and above of the fall.
cascades over the sandstone.

11.90’ 25” — 12.10’ 45” — full and 5’ of shale

12.10’ 45” — 12.15’ 50” — lightly rippled...

12.15’ 50” — 12.25’ 60” — bluish grey shale

like the Earlville shale with interbedded layers of thin sandstone but at the top of the second falls which is about 1’ high come coarse bedded sand on the shale surface.

O. condylata n
P. ventricosa
C. bagiana
P. flabellum
C. cuneata
Ipomoea
P. callicarpa
A. callistega

12.25’ 60” — 12.30’ 65” —

Glaber mar sand shale interbedded with allings on an inclined bed to 3’ from the shale on either side of a very fine bedded with sandy shale.

12.30’ 65” — 12.35’ 70” — in this interval the rocks are very massive in some of which breaks into large lumps while others come apart in stratified layers. Fossil of ancient land P. flabellum
C. cuneata
C. concreta
C. angustifolia
C. angustata
C. callicarpa
C. cuneata
C. angustata
C. angustata
P. constant

1240° 75" — 1245° 80"— bottom 1 sel' var.
band blue gray shale as above

1245° 80" — 1250° 105"— shatter, except for 2" at the top which is of the same
and argus shales with thin fossils

P. sub-burkiniata Agawala
P. constant Pemphi sp.
P. trigonata E. multiconus

1270° 105" — 1275° 110"— shale on that
look into flat thick slabs. Fossils:
F. trigonata
V. minima
V. section

1275° 110" — 1280° 115"— same sandy
blue gray shales

1280° 115" — 1285° 120"— blue gray shale
breaking into irregular calk: foids:
V. arellana — P. constant
V. section — B. cuneidos
V. trigonata — B. carinatus

1285° 120" — 1290° 125"— here at base and partly the gray shales
in which are the partial fossils
of broken shalae. This is the real mouth
of the river and the mouth of
'gayer' shales the next to the 50

12 90
12 200
The formation of the hill of South Edwards is not based on the detailed stratigraphic analysis provided. However, it is noted that the hill is composed of soft, silty, grayish-white shale, and that it is overlain by a thin layer of hard, brownish-red sandstone. The hill is capped by a thin layer of hard, brownish-red sandstone.

**N** - Gray shale in roadbed as fossils

**N°** - About 5/16th light gray, calcareous shale, black with thin, irregular pieces

**N°** - Triated...
Oct. 31.

O - Shrewsbury Brook.

11:55 - 12:20

12:30'25" - 12:35'35" - similar rock, shale and very fine shale. One sample contains small fossils, the rest very fine quartz. A very fine quartz, others quartzite. One sample contains small fossils, the rest very fine quartz. A very fine quartz, others quartzite.

- V. spinipectinata
- V. spinosus
- V. spinipectinata sp.
- V. spinipectinata
- V. spinipectinata
- V. spinipectinata
- V. spinipectinata
- V. spinipectinata
1240'85" — 1245'90" — same — here in the middle of the strata is an irregular mass of a turbiniferina limestone and if collected would probably be somewhat elliptical in section. The layers of no are thick & curved. Does it present the aspect of being a cor. concretion? It collaborates. M. mytilides

1245'90" — 1250'95" same

1250'95" — 1275'120" — Falls of lumpy sandy shales. At the bottom of the fall at one end about 5' of sandstone forming a small cascade. Fossils here abundant, shells in the bottom of the falls seen on the under side of the cliffs bounding it. The fossils present are:

A. crassidictyon.
A. exiguum
A. flexuosum
Fingerstone sp.
B. bransfordii
R. archeri

The rock in the falls is at blue-greyish color. Where fresh both by exposure & weathering to a brownish grey by a very light color.

1275'120" — 1280'125" — Blue grey (light)

Panda shales with:
C. calospora
N. bellicosum
N. oblongata
C. intermedia
Camaretia sp.
1280'125" - 1185'120"

not well exposed
but contains many Conesata.

1285'120" - 1295'125"

U. belludiflora
V. efviatoe
V. granvome
E. pametana
P. ellisio
B. santonens
S. ariani
V. pametana
K. ariana

1290'135" - 1320°165"

Second falls.

V. elpto-
V. carinata
M. thalaspea
V. caucasica
V. alcobasanica
P. pentaptycha
D. ariano
P. schrocki
S. antaeubus
I. ciliata

1320'165" - 1325'170"

come at coating
of mixed, uncleaned fossils.

1325'170" - 1345'190"

Amphisia
along the surface bed but could not
be located.

345'190" - 1350'195"

E. capillaria
E. carinata
E. helotia
E. pentatana
E. concavata
S. ciliata
S. ariani
S. antaeubus
1350' 195' - 1355' 200' - a small cascade at the top, the foot of the waterfall in the fall.

Circiates, Bellformings.

1360' 200" - 1360' 205" - same.

1360' 205" - 1370' 215" - patchy ground at the end of spring, much Crusula armor, leaves, and logs.

A. mebrata
Specimens

0" - rocks in bank of tributary on the east side of the bed. About 10" of coarse sand and gravel with some small stones, with a few fragments and some jumbled rocks with flat edges. The gravel may be bedded with the coarse sand. Shakon in jump, falling in the stream, and with a few feet away:

C. communis
Trachia -
S. tateana
C. communis
S. salensiana
C. maritima.
O° - Exposure on the west side of the bridge. Off the river level the fill about 100 yards to the west is composed of sand, shale, or shale sandstone. There are two with a recognizable fracture. There hold for about 4' flat. In the 48 of similar rocks which I at the top are massive and very fossils. The section is 1 2/5 feet of rock. It cannot be distinguished from the rocks below except by thinning and rock-mass, but as these beds can be collected only with difficulty, the exact range of the former cannot be distinguished. The 6 1/2' thick were marked by a slight thinning on the 6 1/2' that is 1/2' for about 4' on a rather thinner massive calcareous limestone. The following were identified:

Veinsite c

C. sandstone c

C. sandstone

C. c. anengineer

C. c. anengineer

C. c. anengineer

C. c. anengineer

C. c. anengineer

C. c. anengineer

C. c. anengineer

C. c. anengineer

C. c. anengineer

C. c. anengineer

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C. c. anengineer

C. c. anengineer

C. c. anengineer
C. incidunt

immediately on the very fossiliferous
lager mor rath and part of a cliff which was cut
off by a road. The cliff is seen on the
north of the road 11' 5" above the
beds of the ledge in the road there is at 11' 5"

V. ceratoe
V. sectulae
V. molliseta
V. dipenata
V. munita
V.付き
V. corbuliferous
V. incrassata

There are about 20' from the main
level to the ledge, the road which
verticals the region. From the top
of the exposure to the road there
are 10' 6".

Along the road at the intersection
may be seen a series of ledges 7-
taxed and in the hill about it.

From along the road yielded:
- P. radiata
- V. corbuliferous
- V. incrassata

...in the ledges at the top and side
hill were found:
- V. ceratoe
- V. munita
- V. incrassata
- V. elongata
- V. occidentalis
- V. palliata
- V. granulosus
- V. trimonitida
- V. cincta
- V. dipenata
- V. ceratoe
- V. munita
- V. corbuliferous?
- V. trimonitida
The top of the ledges are about 70' above the road T for at 1185.9 H.T. and are about exposed for nearly the whole distance.

These exposures are interesting in that they contain the contact of the Tidlowville and the Moscov. The division is based largely on lithology, a change from n. to a softer bluish shale with a somewhat different fauna. The fauna of the 41 or so of beds assigned to the Tidlowville could not be ascertained. Pteran reaps only a C. coronatus from these beds and apparently missed the prolific faunal of the layer just below the Moscov.
P - Removed about 2/3 mile up the river bank, a rock of the sandstone and conglomerate formation. The rock of increasing light gray to white color, with practically no lamination. Occasionally Permian Conglomerate is seen with these and there are small columns of the calcareous formation. At the surface, 10 feet higher up, the Permian Conglomerate is seen at about 150 feet. The surface is about 150 feet higher, with a few small columns of the conglomerate. At 150 feet, there are some small columns of the sandstone. At 250 feet, there are some larger columns of the conglomerate. These are about 150 feet higher up, with some small columns of the sandstone. At 250 feet, there are some larger columns of the conglomerate.

P' - About 65' above P', or at about 100' above the road intersection of the Buttermilk Falls road and the Main street of the village - West Эdmore highway. These are at about 150' or 200' AT. The contact of the sandstone with the conglomerate is at the south end of the cliffs, while the cliffs of the conglomerate are 300' high. The most prominent face is in the cliff, and the plateau faces at least 200' feet over the buttes, as at least 200' feet.
Specimata
Architectura sp.
Hdokaji
V. nodosoides
V. arenatus
V. sexgeni?

Fossils found loose in the debris at the bottom of the cliffs were:
Nephilopsis sp.
Marigot
V. polygyra

Camusotachia sp.
V. Buncus (top of cliff)
Bryogen
M. u. mirabilis
calchinica sp.
V. caminitus
V. arenatus
V. serpens
V. arenatus
V. caminitus
V. arenatus
V. serpens
V. arenatus
V. arenatus
1160' - 1190' 30" - Layers

1190' 30" - 1195' 35" - The stream bed is composed of smooth light grey sandstone containing large fragments of fossils. These are cemented together into layers of calcite and clay, which swells to a brown color. The fossils are large, rounded in shape, and few in number. Some large ophiolites noted on the map. The surface may be granular or silty. The bed is 3.5 ft. thick (located at party line).

1195' 35" - 1200' 40" - For 2½', the same rock as above gives the floor of the creek. Fossils are few, flattened in the rock. A thin layer of calcite underlies the surface. This interval is finished by a dark grey, slightly sandy shale which becomes coarser as one progresses up the falls. Top of hard rock is at 1201' 47.

1200' 40" - 1205' 45" - No rocks except hard ones in stream bed, no fossils seen in the shale or in the cliff.

1205' 45" - 1210' 50" - In the above bed the soft shale was seen.

L. lanata
N. trigonata
A. muelleri
O. attenuata sp.
O. attenuata sp.
The fall is about 50', high, but that there is about 15' at the bottom of the bridge. Here on the east side of the bridge were from 4 in each arm, B. alveata of all sizes, A. pennatus, H. debilis, C. cf. sceletus, H. insignia, C. of common type, P. cf. inermis.

1260' - 1270' the rock is rather sandy and bright with an irregular fossil into thin slabs. Found in the first 5' are:
- B. alveata
- C. common type

Near the top this.

1270' - 1275' - 5' - 5' 5' - chert of hard calcar
- C. common type
- H. insignia
- C. inermis

1275' - 1285' at the 7' of hard calcar, ground contain pumice containing C. pennatus and S. scalar, while in this area definitely the Sutton in ground level bore for the hard ground just 7' above the river, but where of course the sand hit the hard ground it is the rock out.
the stream and this thickness may be excessive. The red conical X over the very top of these beds is about 200 ft. deep, and thus it is about 1200 ft. from the Hangar to the Red Bridge. The red conical X makes the Rockport horizon only 79-86 ft. thick.

On top of the lo, comes a soft blue grey shale that resembles easily to small fragments. This contains:

C. potthi
P. philidops
L. condotus
P. penicilli
M. priscus

This horizon is quite definitely the base of the New England sheet and occurs at about 1837 A.T. Fig. 11 nearly parallel with some of the Marine fossils on the Minnabola quadrangle.

About 57 years from the contact of the two diamictons, and at about 1796-1795, there are about 1/2 of rocks showing some of the hangar shale—30 ft. 7 in. dehajic
L. elizabetha
L. armillacea sp.
L. cranberrya sp.
L. setada
L. calvinia
L. cucumisitae
t. helicostata
B. subhominigosa
N. argutus
Rock is exposed from the contact of the two horizons on both banks of the stream for 10 or 20 feet vertically up to a small lateral gully at 1315' A.T. In the lateral stream between 1342' A.T. and 1347' is a small fall over flinty sandstone, somewhat coarser than those below. On the next 22' between 1347' A.T. and 1369' just at the private road crossing with the lateral stream is a falls of 80 ft. 10' with exposures on the sides by it. Fossils here are:

C. teissotiata
C. conglomerata
C. regina
P. abellii
M. consociata

The top of the second falls is at 1354' A.T. at the top of the falls Lamprostegia are very abundant but between the top of the falls and the concave thin form clayey shale with sand in it which falls into these clays. In these clays yielded no fossils.

81' above the road a stream issue out from a series of ledges at the bottom they are alternate with thin slabs of white 46' above the bottom ledge come the top of the first series. This is at about 1497' A.T. Here were found:

C. regina
P. abellii
Lamprostegia
Camptostegia
35' above the first ledge a at 1576 in the top of another series also of arnoldian shale. These have \textit{Chicxulub stumps.} with obsolete or a creation edge spines.
edge Chicxulub stems.
September 1, 1939

Solsville about 3 miles W of Bridgewater. Collection in
gypsum with Pholodeoma &
Psephocrinus from Solsville at
This place. Top of Solsville well
drilled on south side
road.

Cherry Valley 5' above stream
0.1 mile up from bridge.

Rock outcrop greatly enlarged to
show at least 30' shale facing
railroad.

Mores Blen now property of
F. D. Trass.

Blen, 1 1/2 miles NW of Dewylee
now a large quarry.
Aug 13
Union Springs

8' black shale
2.1" Aeginites brand

1 9" black sh. 11"
6th to 1"
2 1/2"

Attenuated of black fissile shale

2 1/2"

Bottom of quarry on South side

Woods among represents a small dome that has been cut into as the on each side of the quarry dip in opposite direction. Below are the Mohonk formation light gray l.u. to the extent of 15 or 26. This is under a thin layer of shale about 5 or 6" in thickness and this is succeeded about 21" of slate l.u. divided in half by a very thin seam of shale. This is followed by about 2' of l.u. again divided in half by a seam of shale. On this comes 9-10' of attenuations of black shale with black l.u. ranging from 8 to 9" in thickness to 3 or 5 inches. Then comes the Aeginites bed which is here 21" thick. On this were noted at one place 7-8' of black fissile shale with abundance of B. fiammeda, 56th Aeginites is a dark gray l.u.
in the cracks.

At 197 paces, shale is exposed in the stream bed and banks up to 10'. The shale in the bed of the stream and for 200 feet up is very dark grey and contains hosts of A. Antorath and S. trilobata, on the weathered surface it is light grey with a tinge of brown. These are practically not gritty at all when emulsified beneath the teeth. Other fossils in these are hosts of S. fanumella, L. limiteare, also H. trigonell, C. setigena.

At 230 paces about 4' above stream level the shale is decidely gritty and rather calcareous. Also, it breaks into thicker pieces and is not as brittle as that in the stream bed from 198 paces to 230. Fossils noted in this stone are:

- Brunea sp.
- A. trilobata sp.
- E. bidentate sp.
- E. spallinae sp.
- E. angrigata sp.
- P. frigidus
- M. suturadone

On this side many snails, mostly ornate friends, were found in the Stafford lo.

At 315 paces, in the west bank of the stream about 1' above the stream blue grey calcareous shales are exposed but above these come about 6' of more massive shales which are grey in section, rather gritty and finer granular, often breccia. At the lowest 1/4 of shales fossils are very abundant. L. limiteare and ornate snails.

At 365 paces, where the private road
of very irregular and fragmentary form. It is not quite as dark here as it is in Madison C. cl "weathered to a light grey. The lower surface of some slabs are shaly suggesting a transition from the black shale to the Agoninites. The upper surface is very irregular, cellular and pocked. The collections on some of the weathered blocks contained black shale fillings. No Cephalopods were seen in the stone here, but a small snail and brachiopod were seen.

The only fossils observed in the Marcellus beds below the Agoninites were I. figulinum and P. fragilis, the former in great abundance. None of the L. in the att. forms seem quite as black as the soft Ls. below the Agoninites or Oneida Creek.

Cass Creek.

About 6 places upstream from the Lehigh Valley railroad crossing occurs the upper esoteric party layer of the Marcellus. The shale, grayish black, in places rusted red brown from iron and one unfossiliferous. On the surfaces of the shale can be noted the peculiar pitted pattern seen in the upper Marcellus of Madison Co.

The concretions are very large, some are oval while others are bitted. One of the bitted kind measures fully 4½" in its longest direction while 26" are exposed in the other. Content is 4½ by 3½", and is 20" thick.

The Ls. of the concretions is fine-grained, even and fractures with a smooth conchoidal fracture. In places they tend to be sparsa because of Ls. being deposited
Crosses the stream. These rocks are again displayed. Here about 4' above stream level come dark blue and calcaceous shales. The shales 2 1/2' above the stream level contain many L. huitani and some C. ammonites. At 4' the stone is very hard and could judge the layer to be about 4' thick.

At 5'38' for 3' above stream the rock is a calcaceous shale that has chipped to very small fragments. It carries host of L. umbonata, C. ammonites, L. virgata, and L. truncata with L. truncata.

At 1'05' on the same exposure shows closely jointed soft dark shales like those of the Upper Marcellus on the other side of the town. These are blue black and convexly in strata. A rounded concretion was noted in these beds.

7'90-8'20' pages black shales, fine flint and like the Upper Marcellus, unfossiliferous.

9'23'-
L. umbonata
L. virgata
Productella sp.
L. truncata
L. truncata.

The shales below the highway and downstream from the bridge are very fossiliferous but the fossils are of a very few kinds. The bridge costs about 10,700 pages.

Upstream from the bridge only 10 pages is a 1/4'3' 1/2 feet cascade. At 6' up the shales are blue grey and very calcareous. At the foot they are black, soft, and fossiliferous. Fossil in the hard band at 6' up are -
E. microstomata
G. umbonata
P. fragilis
Lobiana, sp.
E. angulata, sp.

Counting the little calcareous shales below this band is 6" thick. The upper 3" are a hard massive rock, blue gray in color and brittle, and gritty. The upper surface is marked by fractures. In the stream and in some places along the road the stone maintains its massive character but below the bridge it can be seen to be shattered into smaller flakes by the processes of weathering. Such a weathering is suggested by the stone when it is attacked with the hammer as it breaks with some difficulty in some cases, easier in others, into flatish slabs. I observed no fossils in the stone.

On this calcareous shale or bed come about 10' of slightly calcareous shales that are much lighter than the dark shales below the bed. These crumble into small fragments. They are a dark gray in color and contain a scant fauna:

P. fragilis
G. umbonata
B. leda
E. angulata
S. formicella
S. subulatum
Remarks on the Sections on the east side of Cayuga Lake.

Marcellus -

Section at Wood's old quarry showed the contact with the Chenango. The line is drawn at the first band of shale which is about 6" thick. The exposures are as being of a much lighter color than the I. on Amelia Creek. They are thickness than the bed on Onondaga. At Wood's quarry the be at least equal if the be not predominant.

I did not notice the zone of Onondaga - Hamilton fossil soil as Zone A, be explained. In particular attempt was made to determine it.

The Agnostites bed was quite similar to that at Onondaga Co. but appeared lighter and weathered to a more bare surface and had the same circular fracture as that in Madison Co. Some of the large cephalopods in this sand is considerably thinner than in Madison Co.

On the Agnostites at Wood's quarry were noted black shales with abundance of S. fissicellula. The next bed of C. Creek just across the \textit{high railroad bridge} on the old railroad bed, shales were noted the large concretion that occurs near the top of the formation.

After about waves from the
darker shales that were very fossilsiferous containing beds of
fossiliferous limestone and a, marls
in different bands. This condition
was noted under the Stafford, both
at Ashantee and on Flint Creek.
On Crooked Creek these fossilsiferous
Marcellus shales are succeeded by
calcareous shales with a more
varied fauna, which is that of the
Stafford 2. These fossilsiferous shales
were succeeded by a hard calcareous
shale, in which I found no fossils;
the thickness of which could not be
exactly determined because of the
very fracture character of the rock.

Upstream the shales are dark and
unfossilsiferous, still about 10 or
more feet below the hard band at the
ridge the shales around my
fossils, like those that marked the
top of the Marcellus. The Cardiff
Shale band was not fossilsiferous,
except for Ironwood as far as any
investigation indicated. Cleland
gives its thickness as 4½ but
I could not satisfy myself as to
the exact thickness for the shale
below in the falls as also very
calcaceous. The rock of the hard
band except for the stage 1½ feet
checked out exposure to shales like
the shale below. It seemed to me
that the shale was harder and
more calcaceous, for it, but
Cleland's figure should stand.
Tullis's account gives no
thickness for this band as is
quite usual in the New York
Skaneateles

Instead of taking Great Gully Brook for examination, I chose the railroad section and Dean Creek. The reason was because the day was exceedingly overcast and cold, and Great Gully was too long to cover in the one day. The section south of Tonawanda to Dean Creek was about 1100 feet thick and showed light and dark shales, which were quite barren of fossils. The upper part of the section seemed lighter than the lower.

The upper Skaneateles on Dean Creek was very fossiliferous and in some instances, the fossils were Emmottled together in the rocks so as to form cord bands the way they are seen often in the Embrossville of Moscow.

The Skaneateles passed gradually into the Centre-field, which was well developed here. This band of limestone practically the same as that on Bloomer Creek and was very fossiliferous in a short distance above the falls. The black shales of the 3rd. Liolynichthys zone were seen.

There was considerable difficulty here with the location of this level, found it to be only a short distance from the Aurora highway which crosses Dean Creek. This would put the bottom of the Edonville a long way from where it is drawn on Heitner's map. This stone could be reached by walking 500 steps downstream from the highway crossing.
Slinger Glen.

Slinger Point is more known as Potter's Point and is the seat of the Pennsylvania-Dixie Cement company. The large plant is the largest building in the upper Hudson valley. The whole area is very dark when dark and very massive, not splitting easily parallel or at the bedding. On the shore weathered shale in the same horizon is not numerous, but I observed a predominance of *O. billiuncta* and *S. spiriferide*. On the side the waning about 200 paces the company has dumped huge boulders and cut sandstone blocks to the river. The river changes its name to a short distance. On the south side of the Glen only accessible for collecting for a moderate distance, and the exposures on this side are cliffy and difficult to collect. The only zone of actually getting observed was the *Diceratoides* zone which comes on top of the cassio-pian coal about 2 ft below the exposed. My notes must be corrected for I did not find any number of *Diceratoides* at that horizon.
Centerfield about 1" above 602

Section of Jacob Run from the
Bluff 1000 ft. between bed "m" and upper bed has
a. lenticularis
b. kentuckii
bed "l" has a. pennatus, f. cana
the shale above bed "l" in the first 5's
b. pennatus
A. minutegra
about 9 above bed in "m" no lenticularis
very abundant
f. cana

Shale breaks into small angular lumps.
About 11" above bed "m" fauna begins to slow, f. lana drops out, a. unifrons
about 8" and about 13'1 a. spiniferus

Sagia between 13' above bed "m" and
upper sand layer:
B. pennatus
B. canadensis
B. unifrons
B. tenticulata
Palaeoniscus
Pachoniscus
Sagia spiniferus
S. pinnifrons
S. pyramidale
S. pinnicoma
S. styloconus

Shale above sand layer del姑 to 10
in. 5' 5" long.
A. lancei and A. impunctatus
A. americana and A. pinipes
Elevation of Admission by Samuel Gourley.

The Admission is thought to come in at about 25 feet, then 10 and 15 feet nearer, then about 25 feet, then 50 feet, and again 100 feet. The Admission is thus given as 150 feet.

The localities are:

- Plainview
- Roseville
- Clinton
- Leavitt
- Stygiprairie

Species in shale above:

- C. ancora
- B. plicatus
- B. hominis
- C. stygiprairie

Species in shale below:

- C. ancora
- B. plicatus
- B. hominis
- C. stygiprairie
Wheeler's Gulch

Running north of Ilwaco

The railroad ridge is on the right hand side of the Cutler Hill.  The railroad bed here is 400 feet wide.

The track on the left is 100 feet wide.  It is 800 feet long and it has 2 tracks and 2 sidings.  The main line of the track is about 1/2 mile long.

The Cutler and Bellingham are the principal roads.

Rocky, with irregular masses here and there.  The rock is mostly gravel.

Klinghoffer, Clinton, Van Dyke, and Clark.  Favorite.  A gray, jasper gray, and greenish gray.

From 750 to 1600 feet above the sea.

Shale at the base.  Limestone at the top.

Yellow, orange, red, and black.  Green, gray, and white.

Anchialine and calcareous.

The shale at the base is a very soft
shale but the upper ridge at 400 feet
so much harder that the remains
are fissured by the force of the waves.

At 600 feet there is a cliff 40 feet
high of crumbly shale, gray on the surface,

S. ferruginea, S. punicea, C. rectangulata, C. angulata.

At 600 feet there is a cliff 40 feet
high of crumbly shale, gray on the surface,

S. ferruginea, S. punicea, C. rectangulata, C. angulata.
Note: The center field on some upper line has resemble a letter to at the State Ed. Office. The first diagonal runs higher in between the center field of the upper center plume with K Loan.
At 730 faces a 30' bank of the same shale, a hole with a few rounded concretions. At 742 faces C. draco and p. 1.

At 901 faces the same shale, a circuit.

At 946 faces about 15' of the same shale are exposed.

At 1080 faces about 5' of the same shale and limestone are exposed. Sand here are crowded with fossil mollusks.

At 1342-1370 faces a 3' vertical exposure of soft shale with fragmets of sponges. Were thrombolites. These shale are an olive color.

At 1376 face in in 5' above above stony ledge. Laminations were found like those on Murderer. granite found in sand? 1. centum?

Stopped at 1400. North turn in stream and off faller—skene with brown band. 

July 30—below bridge over Geneseo R. Punk up to 6000 feet and large exposure of gray shales with 2 large"组装 at places under"

These are crowded with fossil mollusks of a kind quite above the Centafield.
July 30

Went back down ravine in attempt to locate the land bank which is supposed in the middle vale and teaming the shales that carry T. lema but it was not observed.

At 7:30 past a cliff 35'6" shows a harder shales than others in top which probably belongs to this stone. The shales are 3 ft. 10" thick and fossiliferous. The stone here is weathered and fractured so that it is difficult to recognize, however the stone is similar in the same distance containing and studied at more prominent than the shale here. This was the only suggestion of this to notice.

At 14:10 passes the summit and a small by name in which B. lema and C. setigerus were found.

From 14:40-14:50 passes a bank about 45' high is exposed in the lowest shale. Fossils are mostly common but the species observed are as follows:

- Prana ccc
- S. fissurilla ccc
- C. lema
- J. granulata (very small) 
- Anlygos (Catedriza 3)
- A. spinipes ccc

The ancient sea was noted at this location as "Muller's Cape.

On this "Biklitt Fad" rests a conglomerate limestone which at 14:52 passes 3 3/4' above stream level in it are:
- J. hamiltoniis
- M. pygmaeus
- E. antarctica

Recall to mind that sandstone or conglomerate is very abundant in country other forms to softer shale rock.

This may represent 3th member of 3rd form.
Section at 1450 paces

soil to slate.

7½' shale with *A. spinifrons*, *P. spiniferum*

conterminous, 9" — somewhat discontinuous

shale with *P. spinifrons* + small *P. spiniferum*

stream level

At 1510 acres in stream and about 3' west of the following were found:

for *P. spiniferum*

*P. spiniferum* sp.

*P. spiniferum* sp.

3' the rocks appear to the E. but it is very rotten and unweathered.

Section at 1550 paces.

shale and coal.

- Coal
- 3' *A. spinifrons* + *P. spiniferum*

In the 7½' of shale the following fossils were found:

- *P. spiniferum* (1 spec.)
- *P. spiniferum* (fossil)

Small *P. spiniferum* etc.
S. granulosa
*Ambrocellia*
*Lepidoceras*
*Byeozoa*

This bed may be that in the formation of Potter's Hill.

On this section bed above

*Strophomena* - like those below
*I. seiersi*
*Ambrocellia*
*P. rana* c
*P. consortia*
*Lepidoceras* - like those above

Shale upon which the bed rests at 1592 paces.

On this a foot of shale with:

*C. spilopelides*
*C. scintuus*
*C. asterius*
*C. bivalve*
*P. rana*
*Ambrocellia*
*Byeozoa*
*Strophomena*

Then 4" to with:

*M. subalata* c c
*B. ledei* c c
*Lepidoceras* - like those above
*M. aff. raggeri*
*C. boothi*
*P. rana*

This bed is much more profuse in *M. subalata* than the bed about a foot below. This is probably the *M. subalata* bed.

This bed crosses the stream at 1596 paces.
In this section at 32.5' up in the tullockville were found Helicalis and large bide.

Section at 1610 paces.

Dickson 1 1/8

22.78 (in last)

401 - 39'

continuing 20, across stream at 1690 paces.

Stream level, below, the subalpine

Forma observed here above this.

Dickson -

D. lineatum
Platyscena sp.
A. decussata
B. fulvata
B. planicostata
B. pellplana
M. oviformis
Risana
C. undulata
Epinotia sp.
Parallelena halina
G. concentrica
P. undulata
M. concentrica
Fischeria sp.
At 1670 passes the concretionary band across the stream. L. carinatus with long spines points was found in this shale. Below J. W. Dillione's claim.

At 1709 passes the shale are covered with P. fusiformis and L. leana. Here they also saw S. farciner. These, for 2 ft. vertically, became fossiliferous but no fossils are more of the kind above mentioned. Other fossils are Trigula aff. S. leana C. acroclus, D. brevis, E. acroclus, B. rhomboides, B. perplanum. These shale continue reliably into shell flakes.

At 1820 passes in the stream bed the fauna is changing with S. leana dropping out and A. spiniferae coming in. C. acroclus also &. penncetti in greater abundance and shell forms kitten. Long spine points. Also here was found E. acroclus, I. leana, P. sara, C. acroclus.

At this point the land level must be raised to a conicide in the stream facies pacing.

At 1’ above the 1870" pace a 7” hard band carries the stream. This is only about 10’ below the sidenose on the 1’ below the hard band one can find:

- Steptostomus
- C. penncetti - just below the hard band
- N. lirata
- S. macromus
- C. macromus - right below the hard band
- S. macromus
- C. acroclus
- P. spiniferae
- A. umbonata
In the hard band more found
C. bellatrina
C. cf. princeps
P. naia
M. concentrica?
N. albinoidea
hamiltoniae
Toxoceras hamiltoniae
P. elongata
P. maclella?
P. finitira
P. parvus
P. concentrica
P. pegrana
P. mornus.

The first 5'/5" of shale in this band

best early
Cryptourella
N. kawamatsu
N. spiniferoides
C. acinia
C. dentata
C. longus
Platygona
P. sublana
P. julia?

A short distance higher up below T. honusa
P. journalis
P. boothi
S. pencausa
P. kiusiuta
C. planiostria
Chasmaphyllum
Kraussites

Mr. concentrating
A. spiniferoides
B. penclago
B. papilionensis
F. rana
Terebellidales etc.
C. nobili

This 1" foot between the T. honusa and the 2" hard band is not the anything like
seen. Up to the hard band the sandsmith
is like that seen at other places as
Mudra Ck. But from about 1 above
the hard sand, the appearance changes.
about a foot below the Richmond, where the shale is found from the fives material lignite and coal in it. There are about 6 or these hard layers with many coral and shale between each. The two upper one of a foot each with a foot of shale between the uppermost one and the Richmond are the most prominent. The big coal bed comes in 8 feet below the Richmond. One fauna greatly resembles that of the Richmond in the nterfill especially with P. minus, it might be possible that the shale being coal, just below the Richmond at Muddy Creek. has expanded to form this zone here.

The Indian creek portion of the upper coal zone is 4 1/4-6 1/2 the lower one 3 1/2-4". The Richmond is found 18'7" above the 1870 to stop in the stream bed.

Indian creek.

The Richmond here consists of a single layer of hard grey shale, a foot thick at the escarpment of the stream. Camredol delos does not seem to be in abundance in the stone and the big masses of pyrite are not here seen in it. Fossils do not appear to be abundant in the Richmond here and none could be with certainty identified in it. Only corals were the most abundant.

Heads of Favourita.

In the Richmond rests about 9 of hard light grey lumps some crumbly form of. This stone is certainly saltpeter with shale so that it breaks into hard little shale. Fossils are not very abundant in this stone and consist mostly of corals and byssos.
A single C. verrucosum from twisted measuring over a foot in length built into the side of this rock.

Above this the rock is a hard calcareous shale (Tett) which is very brittle and difficult to break.

Fossil

Platypos (small)
N. bracina
R. decussata (large)
C. indica
S. muskum
Helcionella sp.
F. cristata
Camastrocella sp.
D. penicillata
C. granulosa ?

**Above** the Dilwynian comes another, forming angular masses in the strata and forming a considerable flat in the valley. The stone is very irregular in its weathering, does not contain many fossils, and is exceedingly hard. All of the stone in these 11" as comparatively black and must be highly calcareous. In places nodules and streaks of limestone are formed by aggregations of nodules. Pyrite and other iron oxide are also present in the rock. The rock is covered by a thin, compact, slightly weathered layer of calcareous shale. This layer has a few fossils, such as Helcionella and Camastrocella sp.
July 30

Wheelers Flats, North Branch

Wheelers Flats has been incorrectly mapped for the north branch. A small stream from the section visited July 30 about 14 miles from the road, half a mile 600 paces or 500 yards from the railroad bridge over the river. At 200 paces as noted before there is a 40 foot bank of soft cherty shale. This bank contains a specimen P. fragilis and Platea. Some of the specimens of P. fragilis are very large. The section of rock in the east cross to our Parker point chalcedony. At 200 paces in the stream bed were noted an abundance of C. braithwaite and specimens of C. parvisculum and C. setigerus. At 1000 paces fossils are quite abundant. Here P. nautilus and C. braithwaite abound in the chalcedony. Near each place turned up retained some of their specimen.

P. fragilis
P. parvisculum
C. setigerus
C. braithwaite
Orbiculides sp.

At 1100 paces there is a high bank which 26" up was noted in which 26" up was noted a hard band that stands in relief. This dark brownish gray and gives fine effervescence with acid fossils are

Orbiculides sp.
P. fragilis
Platea

This probably belongs to the Chalcedony bed.
At 1360 paces there are large specimens of 2 kinds in the shales - 1 that are the same
At 1360 paces the hard band is about
14" thick & give readily effervescence with acid which is in contrast to the
shales above and below which only
give a very slight effervescence. I.
When broken the Abundant shale
in the shales 10' or so below the lot
up to it. The land at 1380 paces is
about 11' above stream level

Section at 1720 paces

At 1720 paces a long
section can be measured.
The shales below the first
be band in 10' (Plattetown
band) are slaty and
c onsequent in structure.
They have a brownish
gray streak, and some scat tered
by Plattetown band.

46'

6'6" 5" M. slate. in abundance at

1703 paces. These
shales above the
Plattetown band are
more easily broken
into much thinner

7' ? Plagdistum bed

48'

21'

5' pl. slate. in abundance at

1703 paces. These
shales above the
Plattetown band are
more easily broken
into much thinner

At 1325 paces a small
specimen in the
stream bed yielded
the following
C. setigera  
S. ferrinella
C. lepida
S. pennata
C. muscorum  S. umbonata

at 1560 paces a foot above steam level S. pennata
S. umbonata.

at 1595 paces along stream S. pennata
Between 1895 and 1911 paces S. pennata

at 1911 paces 1% 1/2 above steam level
the shallows have the tiny P. carinata
noted at Morden and also S. pennata
P. rana and S. ferrinella. The small
Engelhardtia has only a small initial
stand and is unscathed by abundance
of P. rana. The P. carinata I fed on near
the stream at 19.30 paces.

at 1975 paces a foot above stream
a land entomology box was met with:

contains:

Small Ambrocles found in the crevice
just below this land above seen
Small P. carinata again and S. pennata
in abundance: Also U. pennata and
Oecanthus. In the other gulley about
6’ below the name was abundant
at 2035 poaces there was seen 6.5’
above which the two hands to the
7th: The crossing of the Engelhardtia band
of the stream. The bed above is about
7.5 paces about 3’ below the rest.

S. pensinata attached to Soponema.

P. spinipalpa
S. pennata
S. ferrinella
In the first hard band of the two crowded together were found:

* Stroplasma *

* Ammonites *

* P. lemniscata *

* C. ammoticum *

* P. amnicola *

Cross stream at 20.93 paces.

The * Neocomumia* bed crosses at 21.15 paces.

At 22.00 paces the * Ammonite* bed crosses the stream. The shale in this 6' interval has

* P. amnicola * and * C. ammoticum *

At 22.30 paces comes the falls. The floor of the bed at 22.30 paces at the bottom of the falls is composed of

* Callovites * and * C. lemniscata * etc.

Section (face of falls)

9 1/2" at foot

9 1/2" at base

9 1/2" at sewer

10'10" (sewer)

ex with large * Neocomumia *

21' Shell

* Stroplasma *

* Ammonites *

* P. lemniscata * near top.

stream bed
Sectin Between E.S. with W. maillota and
Tichano
sh. 14.7".

1. Tichano 10m.
sh. 14".
sh. 8".
sh. 20".
sh. 200.
sh. 2" calc. sh.
sh. 2" calc.

sh. 35.6°
sh. 27°
sh. 27°
sh. 27°

12.11" 6.4" - 4.4"

1. Lethania, S. goniata, deep corals.

2.

3. Lethania, S. goniata, deep corals.

Pentamerella, R. penelope C. suberupta.
Fossil, observed in the Dickson

*favusite* sp. (branch), *A. densusata*  
*P. densusata*  
*H. sculptitus*  
*Canavartia* sp.  
*H. spiniferidus*

The fall is 4½' high, on the Dickson rest about 14' of hard calcareous rock, and above this 7'10" of hard shale, and on the little right branches of 6', that forms the upper cascade: and a ridge about the valley.  

Rocks above the Dickson forms a cascade in the stream just above Curt's the highway. The stream flows under the highway and then out the 3 again at 100' passes south and west of the bridge and forms a 4½' falls, where the falls turns into a flow to the Tennessee from 370' to 850' passes one can walk on the 6 right to the falls which is at 85'6 passes from the bridge. Stream turns west right south of 6, two houses, arranged together.
July 30

200 - 1500 above horse occurs
at little 100'-150' calcarious, blue and faint above the

gangue.

I saw large

Octocrocuta

C. denticata

C. concinna

C. gracilis

C. brevis

C. robustus

A whole or thin calcarious layer and concretionary masses, some
abounding in fossils.

650 - 768 - Cliff of shale 18' high. Blue

Sympolymadomides trilobate brown or blue

C. decemta

S. penumbra

C. laticeps

S. sculpta

845 - 865 - same shale -

C. longissima

S. penumbra

950 - 1400

Same blue shale

S. penumbra

S. sculpta

At 1160 9' ammonites of large size is

common.

At 1286 there is a calcarious layer
about 8' thick 7' above stream bed

S. pileata

C. bellaticata

C. gymnoca
At 1400 places comes the six under
fielded plates forming irregular Jour-
spiral. Blue fish containing some
plan. C. lamellata. C. ovata.

2. C. ovata
3. C. ovata
4. C. ovata
5. C. ovata

Approximately 5' above the calcareous
bedding, two larger perforations. The
two fossils:
G. ovata
C. ovata
C. ovata
C. ovata
C. ovata

The concavities formed by small
black concretions, like a similar one
at the top of the Kaston shale on
at the other. At 1427 places it is
2' above stream. 19' above these concretions
is C. ovata. Another layer perhaps the
same as the top of calcareous
boulders.

1525-1547' at steam level hard shale
contains many C. ovata, other
fossils are:
G. ovata
C. ovata
C. ovata
C. ovata
C. ovata

1757' at steam level
C. ovata
C. ovata
C. ovata
C. ovata
C. ovata
The Ambrosoleia bed containing for fully 7' at the Stream - L. of Kansas. 
18.25 paces - 2' above stream at 1940 
layer of concretions 6" thick. In the 
hole below the concretions are:
- P. americanus
- R. americanus
- C. octopus

1921 - 1943 - Blue gray sh.
Shale fossiliferous - The famous for 2' shal.
P. americanus  C. americanus
P. americana  C. Frasera
R. smith
R. vaneyii
C. victorius

At 1943 comes a hard calcareous 
layer the one 3' below the Kansas. 
This layer is of hard corneous clay. 
and contains:
- P. carinata
- P. sonorensis
- P. neumayri
- P. cambria
- P. juniperi
- P. sonorensis
- C. sonorensis
- P. sonorensis

p.m. the next 9' shale more seen
S. peninus  C. octopus
C. boettger
The beachrock's beds begin with the shingle above the coralline containing little dark concretions. On the OR portion, well out of sight, the shore and base are best determined. The lower surf zone is apparently sterile. The fossils found in the basaltic flow at the base are rare and include a few small fossils in the basaltic layers. The fossils, especially the crinoids, are very few in number, but the varied 7000 fossils on either side indicate the presence of the subaqueous current. All of the fossils are shale, labrea, and a few few fossils, but beyond 7000 fossils, the individual fossils and a large variety of Pteropods. This fossil shale contains a layer of coralline in which a uniform red color. This fossil ranges far enough to describe it, and the upper fossil-bearing shale is not found. The coralline limestone consists of the brown limestone that forms the rock at the base.
Aug 7

Wilson Creek

1130 - 1355 = 145 ft. 5.15". First rock observed at 1230 paces from the highway bridge. Dark grey shale much jointed. Parallel, white plate-like with a low concordant surface. All the cliffs show a notable fissility. Fossils are rare in:

C. curta
Pareotia sp.
M. suborbital
P. fragilia
P. dichotoma
E. subulatum

The exposure is 15' high at 1355.

1355 - 1445 = 2nd H.E. step 10.10" - covered
1445 - 1522 = covered
1522 - 1578 = shale like that below [1445 - 1522, 2nd step 15.15"

1. obtusata
2. polymorpha
3. obtusata
4. polymorpha

Two kinds of shale are represented here. A dark, wavy, faintly feldspar-cemented and a shale with a single fracture. Poorly preserved fossils in both - sandy.

1528 - 1645 - covered = 15.15" - 20.20".
1645 - 1785 = covered
1785 - 1921 = shale about 10' vertical. This is a step in and above the natural 10'.

1821. A slide from the cliff. The following were seen:

C. nemerosus
P. fragila
C. obtusus
P. dichotoma
M. pygmaea

1921 - 1820 = covered 1665 - 1820 = 20.20" - 25.1.5".
1820-1855 - covered - 1820-1915 = 25' 35" - 30' 30"
layer of concretions dipping upstream. Above
that is a calcareous layer about 7" thick
about 10" above the at 150 feet. The
calcarenite layer is about 9' above the con-
cretions and breaks off at the shale
above the concretions. At 1700 the calcaren-
layer is 4' above stream level. The
concretions bed lies at stream level. At
1960 feet, at 1790 the calcarenite bed is
above stream level. By drilling, it is 1900 W 5' N.

Fossils in this bed are:

- *Camarchia*
- *C. uncinata*
- *Panora*
- *C. amnicola*
- *C. mucronata*

The G. is the gray clay, sub-rounded
fractured rocks, few fossils except the single
contracted -

- 2035 - 2146 - covered = 35' 35" - 40' 40"
- 2146 - 2278 - covered = 40' 40" - 45' 45" - "Eastfield"

is about 25 above the step
- 2278 - 2328 = 45' 45" - 50' 50"
- 2278 - 2275 - covered

there the shale dipping
downstream, it is the shale between the
Centerfield and the 7" calcarenite layer. Bony fossils
are:

- *C. uncinata* The shale here is more angularly broken
and fossils at 4 have a much steeper
appearance dipping downstream. The Centerfield
is about 100' above it. The calcarenite bed
is dipping N 102° E 6 1/2° N and N 108° E 5° 5.

at 479. It is 34' above stream level on
the south side. The thickness is 25' wide
- 1790 - 2479 = 50' 50" - 55' 55"
at 25°, it forms a 5° cascade and the
stream descends over a notable
distance. The shall above the calcarenite
layer presents more fossils and, closely, the
layer above it. The calcarenite is fine and the
calcarenite layer above it. The calcarenite
layer above it. The calcarenite
layer above it. The calcarenite

24° 24' - 25° 24' = 55' 55" - 60' 30"

To 28° 19' the calcarenite layer disappears being
replaced by the shelf above it. In the stream
bed, 26° 19' - 27° 12' above the calcarenite bed.

26° 19' - 26° 19' = 55' 55" - 70' 30"

26° 35' - 27° 35' = 70' 30' - 70' 30'

The shelf in the lower 13 in dark
fossil, namely, black, above in fossils
in pebble.

12' 10" - 13' 10"

In California, Santa Cruz

12' 10" - 14' 10" - dark, calcarenite and Conifer

The reservoir below the. At Conifer, the
dark, calcarenite is transitional to the Conifer.
1st 7'5" of Centerfield - soft sandy shale
C. indacta, A. macromoth, P. hana
Corals: C. corallim, T. pygmaea, P. robusta
C. murena
C. macrura

Fossils in the upper Centerfield:
A. spined scales
B. 10'0" - 17'5" - 27'10"
Above 17' the Centerfield becomes shaly
containing numerous Belemnites. The top of
the fall is formed at all and contains
enormous scales. The corals are smooth
in this layer. The fall is about 33' high
and this includes the cascade west of
the bridge. The Centerfield is fully 25' thick.
The top of the Centerfield is thought to be by
A.F. 106' above the 1730 pace.

Just west of the bridge fossils are
sunglass, above above of B. spined scales
S. sculptus
R. vanni, ravi
At 100 paces west of way the bridge
the famous shale. I've seen T. horne
had mono frons, D. inequustula,
A. compressi, byrgra petr
100 - 212 - conch!

212 -

Fossils:
A. spined scales
A. tubulosa
A. sculptus
P. foeldgenium
P. planus
A. andicula
P. bennettii
P. hana
C. corallina
The Centerfield disappears at 264 feet. 

There are a number of corrections near the contact of the Centerfield and Redland. The Centerfield is about 263 feet thick. The upper shale amount is fully 10-14 feet.

The Centerfield is succeeded by the Ladybird at 264 feet which continues to the highway bridge. Fossils in the Ladybird from 800-880 feet from this point bridged 2-3 ft.

<table>
<thead>
<tr>
<th>Fossil</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. angulata</td>
<td></td>
</tr>
<tr>
<td>C. setacea</td>
<td></td>
</tr>
<tr>
<td>C. punctata</td>
<td></td>
</tr>
<tr>
<td>C. lepidus</td>
<td></td>
</tr>
<tr>
<td>C. umbonata</td>
<td></td>
</tr>
<tr>
<td>P. leonina</td>
<td></td>
</tr>
<tr>
<td>P. humi</td>
<td></td>
</tr>
<tr>
<td>P. caniniformis</td>
<td></td>
</tr>
<tr>
<td>P. pygmaea</td>
<td></td>
</tr>
<tr>
<td>P. lochiae</td>
<td></td>
</tr>
<tr>
<td>P. olivae</td>
<td></td>
</tr>
<tr>
<td>P. partula</td>
<td></td>
</tr>
<tr>
<td>P. leonina</td>
<td></td>
</tr>
</tbody>
</table>

At 1230 the plesiodontian beds are at stream level at 263 feet in between 1100 + 1200 feet. At 1230 the following were seen in the Redland:

- C. boodliei
- C. boodliei
- C. pygmaea
- C. pygmaea
- C. pygmaea
- C. pygmaea
- C. pygmaea
- C. pygmaea
- C. pygmaea
- C. pygmaea
- C. pygmaea
1678 the rocks in spot and fissile and dark. The creek followed up to the third road beyond the Westobble Road showed the Plagiodytum bed at 1230 feet above the red ridge but beyond this exposure only. Not fissile shale believed to be the Ledyard as exposed appears the an undulation here the Ledyard above for distance for a great distance according to the map the Ledyard is about 65' thick. The section on Wilson Creek is about as follows:

- Plagiodytum bed
- Ledyard 65'
- Sandstone with nodules 26'
- Shale 27' Bituminous
- Limestone 7'
- Shale 9'
- Limestone 9'
- 30' Shale
- Angular Conglomerate
- Sandy Shale

[Diagram of geological layers]
Aug 8, 1928

Kachina Creek

Study begins at base of lowest falls.

0-5'5"—Britle Ledge shale, fossil clay
5'5"-10'10"—Shell, slightly sandy
10'10"—G. lemoni
8' truncata

8' truncata abundant at about 3' below
the top of 10'10"

10'10"—shell, becomes clay and brown, fossils, faunal bed, upper part of the top of 15'15" the
flattening clay bed has come in.

15'15"—20'20"—gray, slightly annaceous shale
fossils

O. pristis
M. sp. g. nanus
P. lema
M. baltica
O. inclusa

20'20"—25'25"—The upper 2' of this interval
are very fossiliferous:
C. carminatis
C. lema
B. leptopus
B. sp."plicatula"
E. "plumulus"
E. "plumulus"
25'-25" - 30'-30" similar dark grey shale weathering ash.

Oxyu
D. decussata
C. mariamatis
A. opifexides
P. incrustata

30'-35" - 35'-35" - sable shale.

P. decussata
P. mariamatis
R. ascendens
P. gans

35'-35" - 35'-40" - bluffs right to base of ind. falls.

Salts come up in the middle falls the rocks become less fossiliferous and the shales are less fossiliferous and rather dense in add.

At the top of 35'-35" are and in the following species

Cephalophaga
D. dilatata
C. macroloma
C. mariamatis
P. incrustata
R. decussata
O. cana
P. platyceras
P. julia
C. candida

In middle falls - about 29' light to 10' bluffs. About 27 feet of the bluffs and the beds carrying the bluffs, the shale carrying the bluffs is agglomerated shales and it is 29 feet above the fall.
What is called the Allegheny River is a sheet of water with large curves and many small eddies. It is navigable for about 2,500 miles from the mouth of the middle falls. On places it abounds in coal.

It is followed by 4½ miles of land, rather hilly and rough, and this is followed by a series of precipitous falls. The first fall contains:

Physcon A
Coral Stones
Cobblestones
W. concentrations

This is followed by 2½ miles of land, from the top of the middle falls to the top of the third falls, which is about 32 feet high. The Deep River falls are about 49 feet thick. The first fall is 20 feet, the middle falls is 43 feet, and the upper fall is 22 feet.

Warrington 110°-1"
San_diego shale 3'
calcareous sandy 4-6'
shale 6'
Calc. formation 11'
shale 9' Ark.

Litholite 1-4 1'
with wavy shale 2½ - 8'

Menthes 22
12' shale Q. premontana (3)

shale 7' ? Eubpeedontia currellia

shale Q. umbrella 25' (?)

sand shelve 4'
The shale for 4" below the bed
S. spinifera
E. cornuta
D. novae-angliae
B. cornuta
A. opesia

The 3-4' sandy shale has:
C. messentia
P. cornuta
F. cornuta

From top of Menotomy to Crazy horse bed by W.T. was
2000 feet upstream from bridge. Bed was 6' above
25 or 50 feet from bridge it is 2'
about 8' above stream. Where it is in
the stream it forms a cascade about 1'
high.

At 2000 feet the Cenotopsea bed is 3' above
sheet level.

2550 feet the Cenotopsea bed is at the
top of a 3' cascade and drops 3' off below the stream. The currentishment
below stream. Level at 2500 feet was high. 1200
The sandy bed goes below stream at 240

1701 feet low, chalks of chalk. This
represents about 9' by the Amherst
quarry at 750 feet there were high cliffs.

North of this could only be
was present the whole of the 15th.

1406 - a small side gully allowed
some water. The rock of the clamping
zone - B. nubecula. Problem zone
Cenotopsea. above the Sandstone bed. The Amherstian bed
the way. Zebra's abounds are:
A. affinis
B. maxima
C. reticulata
D. spiniferoides
E. plesiana
F. trilobata
G. Bellistincta
H. lancea
I. securidactyla
J. loricata
K. aspersa
L. grossularia
M. granulosa

P. gregaria?
P. sp.?
S. corna
A. scutelaria
B. ovum
C. impressa
D. pinata
E. fruticata

3248 passed to base 13.75' by black shale
A. bothi
B. tullius
Braddock - Kendig Creek, about 3 miles SW of Waterloo, Genesee County, N.Y.

Kendig Creek
Near the former's (a short distance)
upstream, layers of hard line 1.5 feet
of sand, break gently seaward to
be eroded. One layer is 3-4 feet.
There were 1/2 layers of los and 2/4
4". In the lo's were seen

zooplankton sp.

C.fusiformes
A. aequipedis
B. steinhorstii

granular

A carbonate

A marine copepod of this group to the
to find if striking. One fish to the
how the lo's is brown. A gray, weathering

C. levius

A. limnetic

The above to be in far, far away from

Marselles.
The United States Geological Survey is making a topographic atlas of the United States. This work began in 1882, and its results consist of published maps of more than 40 per cent of the country, exclusive of possessions.

This topographic atlas is published in the form of sheets measuring about 16 by 20 inches. The plan adopted is to divide the country into quadrangles by parallels of latitude and meridians of longitude, and to map the different quadrangles on different scales, the scale for each map being that which is best adapted to the development of the country, and consequently standard maps are of nearly uniform size, they being of different sizes. On the lower margin of each topographic scale showing distances in feet, meters, and additional, the scale of the map is shown by a fraction, a fixed ratio between linear measurements on the ground and corresponding distances on the map. For example, \( \frac{1}{25,000} \) means that 1 unit on the map (such as 1 inch or 1 meter) represents 25,000 similar units on the ground.

Although some areas are surveyed and some are not, and published on special scales for special purposes, the standard topographic surveys for the United States are the resulting maps that have for many years been devoted to the country.

The heights of many points—such as road corners, survey stations, surface marks, and bench marks—are given on the map in figures, which show altitudes to the nearest foot only, exact altitudes—those of bench marks—as well as the geographical coordinates of triangulation stations, are published in bulletin issued by the Geological Survey.

Lettering and the works of man are shown in black. Features of different kinds and weights. Meditated roads are shown in double lines, one of which is accentuated. Other public
Black lines: Base of Onandaga
Green: Top of Outcrop of Onandaga
Red line: Top of Onandaga below Marcellus Shale