

1908 1913

doc. 107

Trip with Basler, Holtedahl
and Bell.

Washington, Md. and W. Va.

1820-21 1821-22 1822-23 1823-24

1824-25 1825-26 1826-27 1827-28

1828-29 1829-30 1830-31 1831-32

1832-33 1833-34 1834-35 1835-36

1836-37 1837-38 1838-39 1839-40

1840-41 1841-42 1842-43 1843-44

1844-45 1845-46 1846-47 1847-48

1848-49 1849-50 1850-51 1851-52

1852-53 1853-54 1854-55 1855-56

1856-57 1857-58 1858-59 1859-60

1860-61 1861-62 1862-63 1863-64

1864-65 1865-66 1866-67 1867-68

1868-69 1869-70 1870-71 1871-72

1872-73 1873-74 1874-75 1875-76

1876-77 1877-78 1878-79 1879-80

1880-81 1881-82 1882-83 1883-84

1884-85 1885-86 1886-87 1887-88

1888-89 1889-90 1890-91 1891-92

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1896-97 1897-98 1898-99 1899-00

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1904-05 1905-06 1906-07 1907-08

1908-09 1909-10 1910-11 1911-12

1912-13 1913-14 1914-15 1915-16

1916-17 1917-18 1918-19 1919-20

1920-21 1921-22 1922-23 1923-24

1924-25 1925-26 1926-27 1927-28

1928-29 1929-30 1930-31 1931-32

1932-33 1933-34 1934-35 1935-36

1936-37 1937-38 1938-39 1939-40

1940-41 1941-42 1942-43 1943-44

1944-45 1945-46 1946-47 1947-48

1948-49 1949-50 1950-51 1951-52

1952-53 1953-54 1954-55 1955-56

1956-57 1957-58 1958-59 1959-60

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1964-65 1965-66 1966-67 1967-68

1968-69 1969-70 1970-71 1971-72

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1988-89 1989-90 1990-91 1991-92

1992-93 1993-94 1994-95 1995-96

1996-97 1997-98 1998-99 1999-00

2000-01 2001-02 2002-03 2003-04

2004-05 2005-06 2006-07 2007-08

2008-09 2009-10 2010-11 2011-12

2012-13 2013-14 2014-15 2015-16

2016-17 2017-18 2018-19 2019-20

2020-21 2021-22 2022-23 2023-24

2024-25 2025-26 2026-27 2027-28

2028-29 2029-30 2030-31 2031-32

2032-33 2033-34 2034-35 2035-36

M. J. Felt. 810, St. 7th St. Cincinnati.

Phil Schuchert 708 Bells St. Cincinnati.

A. E. Schuchert 3937 Regent Ave., Howard, Q.

doc. 107

Charles Schuchert
Yale University
New Haven, Conn.

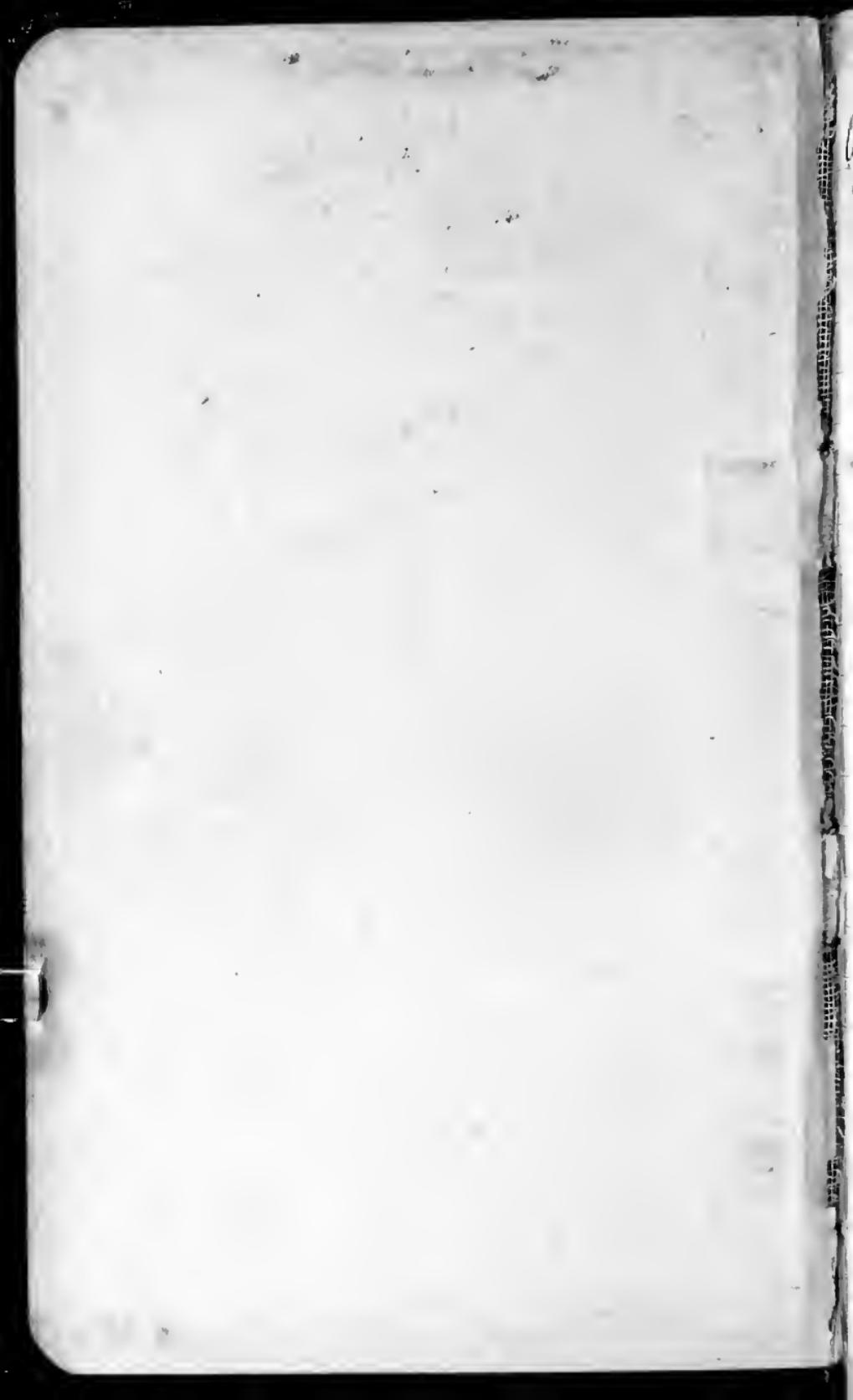
1907. 1913

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Apr. 21 - May 4, 1913
Md., W. Va.

3022

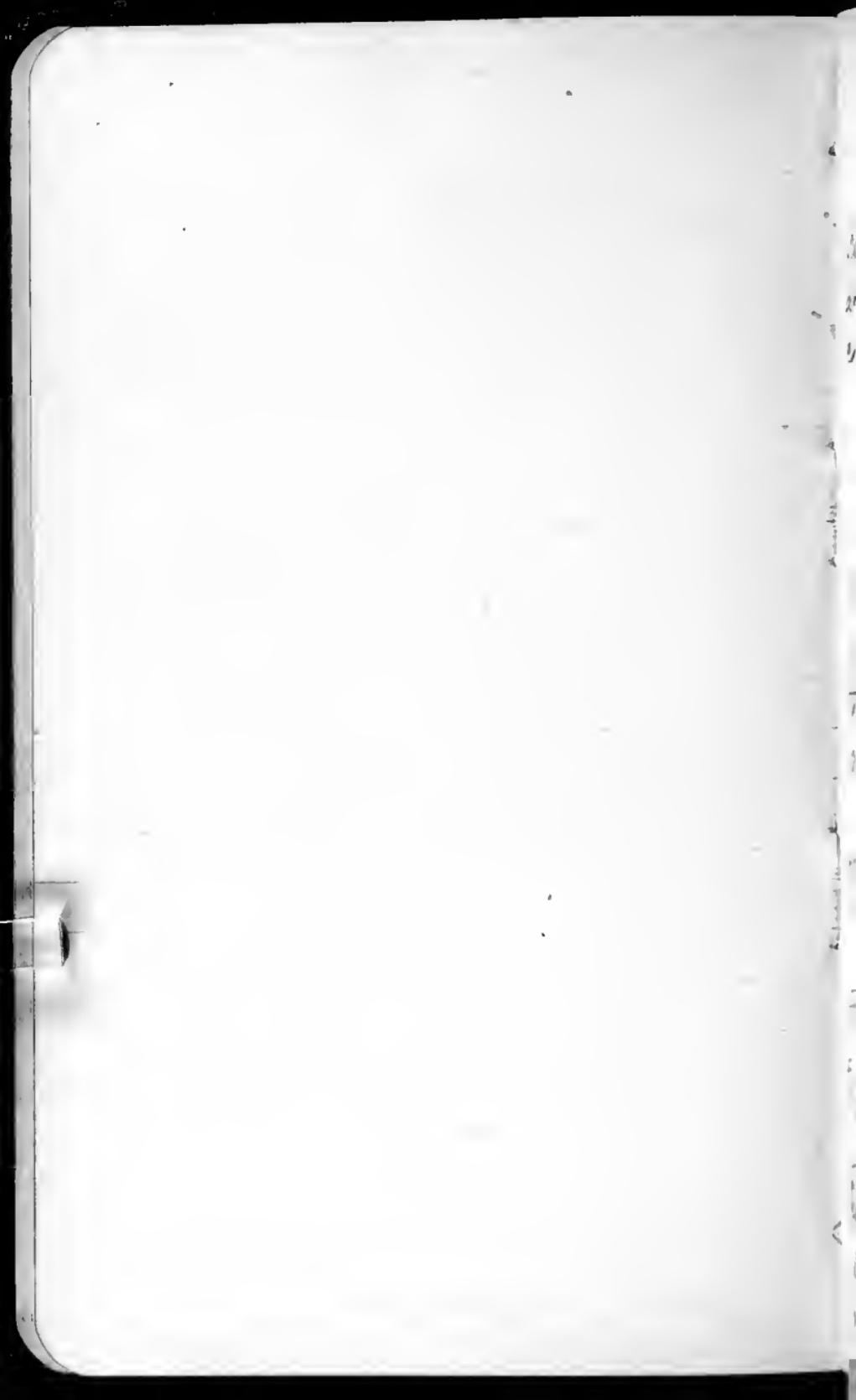
Sep. 11, 1908
Md



- April 22 Reception at A.S.A.M.
9 P.M.
- " 23 Reception Carnegie Inst. of Wash.
9 P.M.
16th and P.
- " 24 Annual Dinner.







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April 21-1913 New Haven.

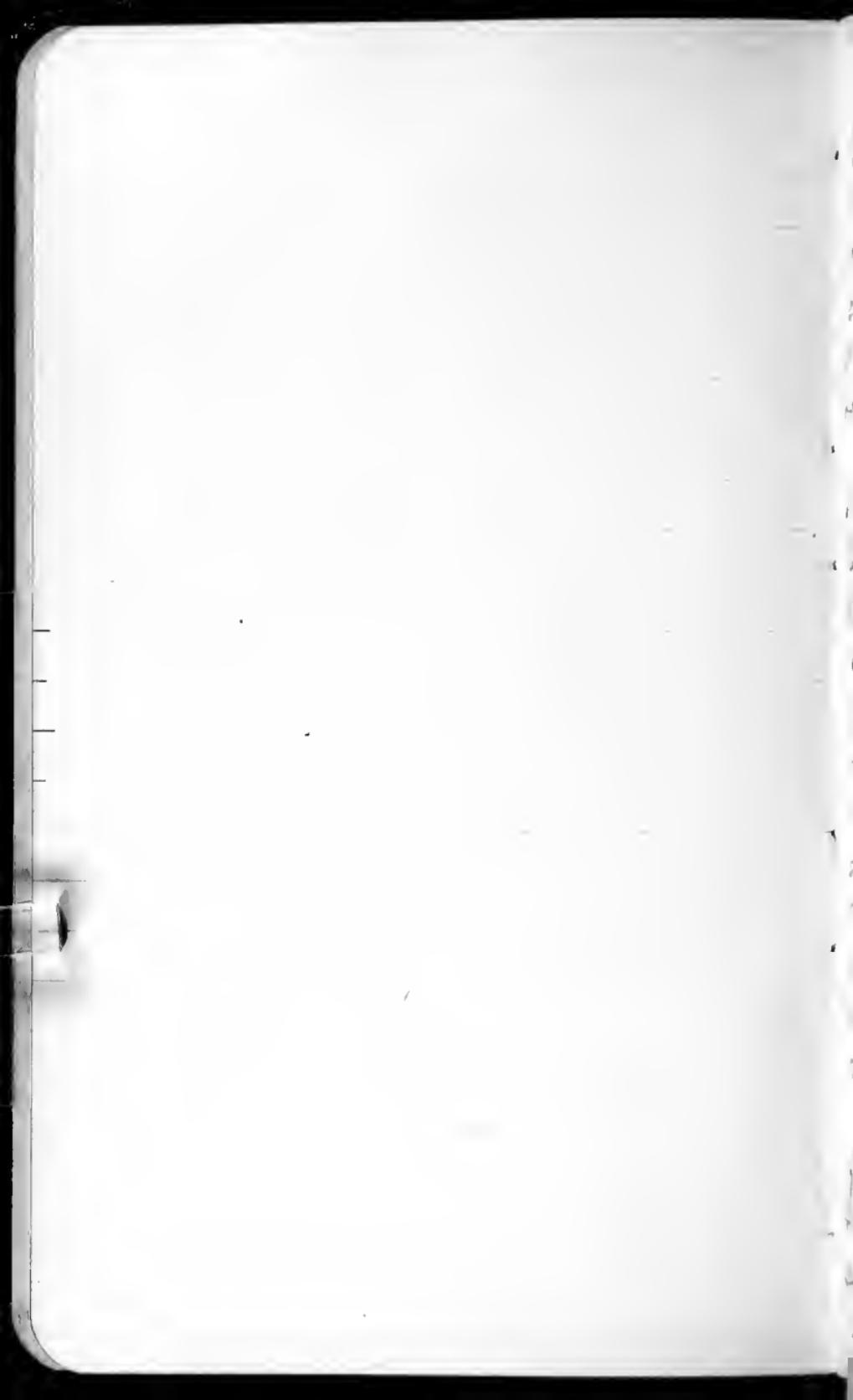
Left on the 8 A.M. and at 10.10 at
New York (P.R.R.) and arrived at Washington
at 3.20. Staying at Raleigh. Had the
enjoyment of the critical Perform Startings.

April 22-24-1913 Washington.

Attending the Annual Meet. of the
National Academy. The 100-Centennial
Meetings. This time a rather social affair
than a gathering listening to a heterogeneous
man of scientific papers.

Of those men elected to the Academy
were Professors Peterson, Harrison and
Bordel.

It was the year of Presidential Elect.
First a presidential vote was taken and about
a dozen names were nominated. To recall
Cattle and game vote, a rather bad affair
for Osborne. Wilson of New York got a while
Bordel of Baltimore and Talcott won the
leaders. Wilson withdrew and so the vote
was on the leaders. Bordel won over Talcott.



by seven votes. The whole claim was said
to have been injurious to Cattell against Hallcott
on the ground that Washington men should not
dominate the Academy. This was the Rotarian
mistake the Academy has ever made as will
be seen later on.

The vote then was on Vice President and
Lounse are one voted to continue Hallcott.
He at once withdrew and so did the other
Rotarians. At a late and noble a fine
speech by Hallcott and he told them
that they should not do so. A speech of no nice
because if you do late Hallcott did not
withdraw and he was Lounse elected but if
anyone supposed that he will do the progressive
work of the Academy. If you want in his place I would
not even have allowed the Academy to
vote me in as Vice President.

Say was elected in place of Lounse
first wanting to withdraw. Say will make
Secretary but as he can't be willing to make the
effort. Cattell is no longer on the Council,
a good evidence.

Triassic limestone conglomerates.

On Sunday after seeing the Cambrian limestones I am now certain that the Triassic conglomerates are derived from these limestones. But one extended across the Blue Ridge and Catskill Mountain. The milky white and banded limestones are still present in great abundance west of Staunton. The fact that the Triassic conglomerates contain no shale is due to the different climate that prevailed in Triassic time when compared with the climate of today. The former was arid and produced no residual clays. As there are no Cambrian conglomerates in the Triassic conglomerates we must then assume that these did not extend across the Blue Ridge or at least not west of Catskill Mt.

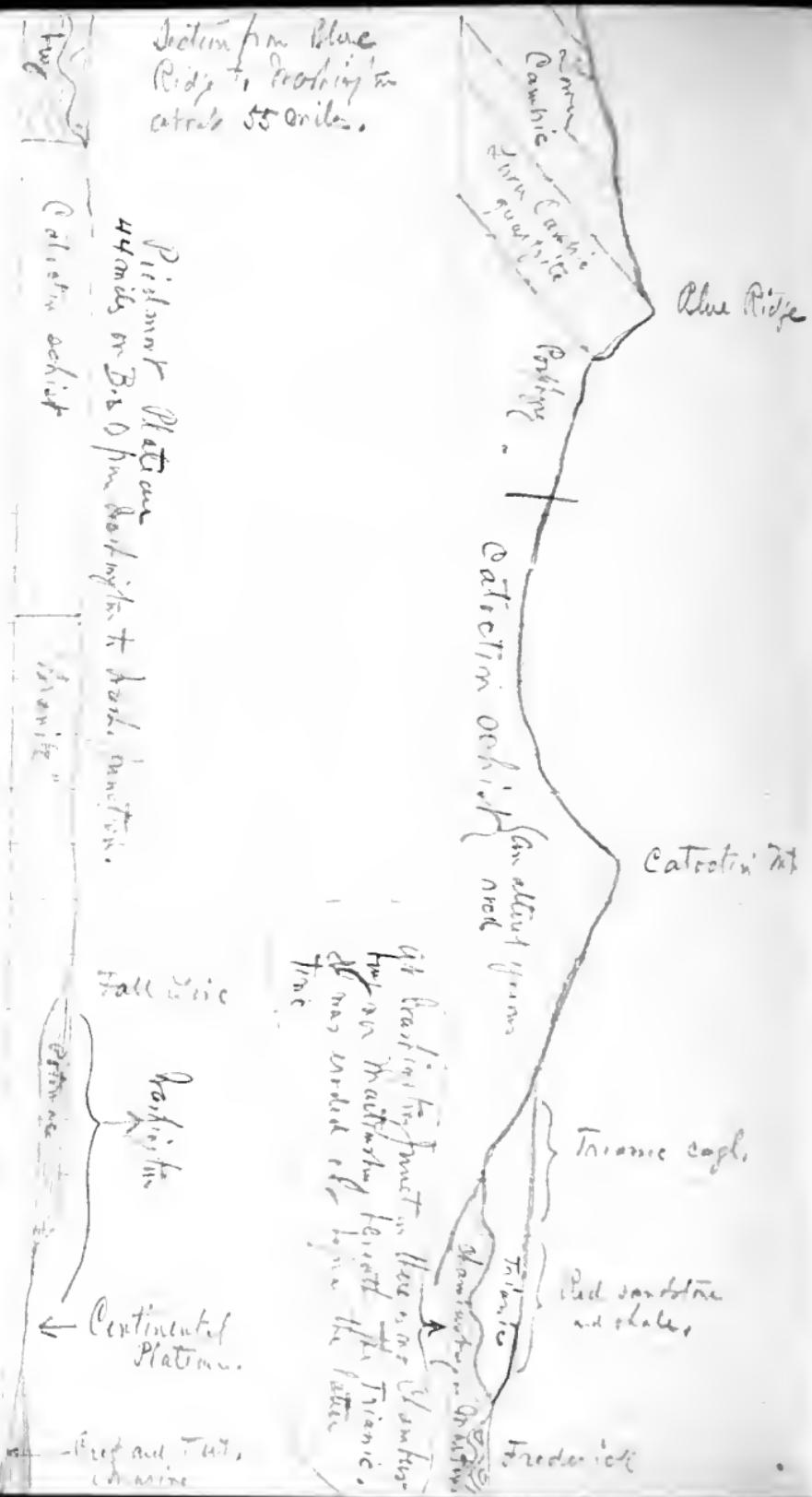
Fix of my climatic maps accordingly.
Dear those of you who time for the wider area of continental definition.

April 25-1913. Washington.

Started out with Bascom ^{at} 10:30 A.M.
and ^{Mr. A.} Bell to see the Potomac deposits at the
head of 16th N.W. at the Geological Survey en-
trance we saw the oldest Pleistocene gravel directly
overlying the Potomac rock. These are upon the
Piedmont plateau and at a higher level than
the Potomac. Then we went down 16th street
and looked over the level Piedmont plain,
the high Coastal plain or the Falls zone.
Just as soon as we got a little below the Pied-
mont plain the Potomac came in in great force
for it was a meadow by the Pleistocene
glaciers.

The Potomac against the Falls zone is distinctly
face of local conglomerates and the sand is
undoubtedly interbedded with the mud against
the Falls zone.

There are some in low, shallow streaks, and in others
there are numerous well rolled up into small mud
balls.

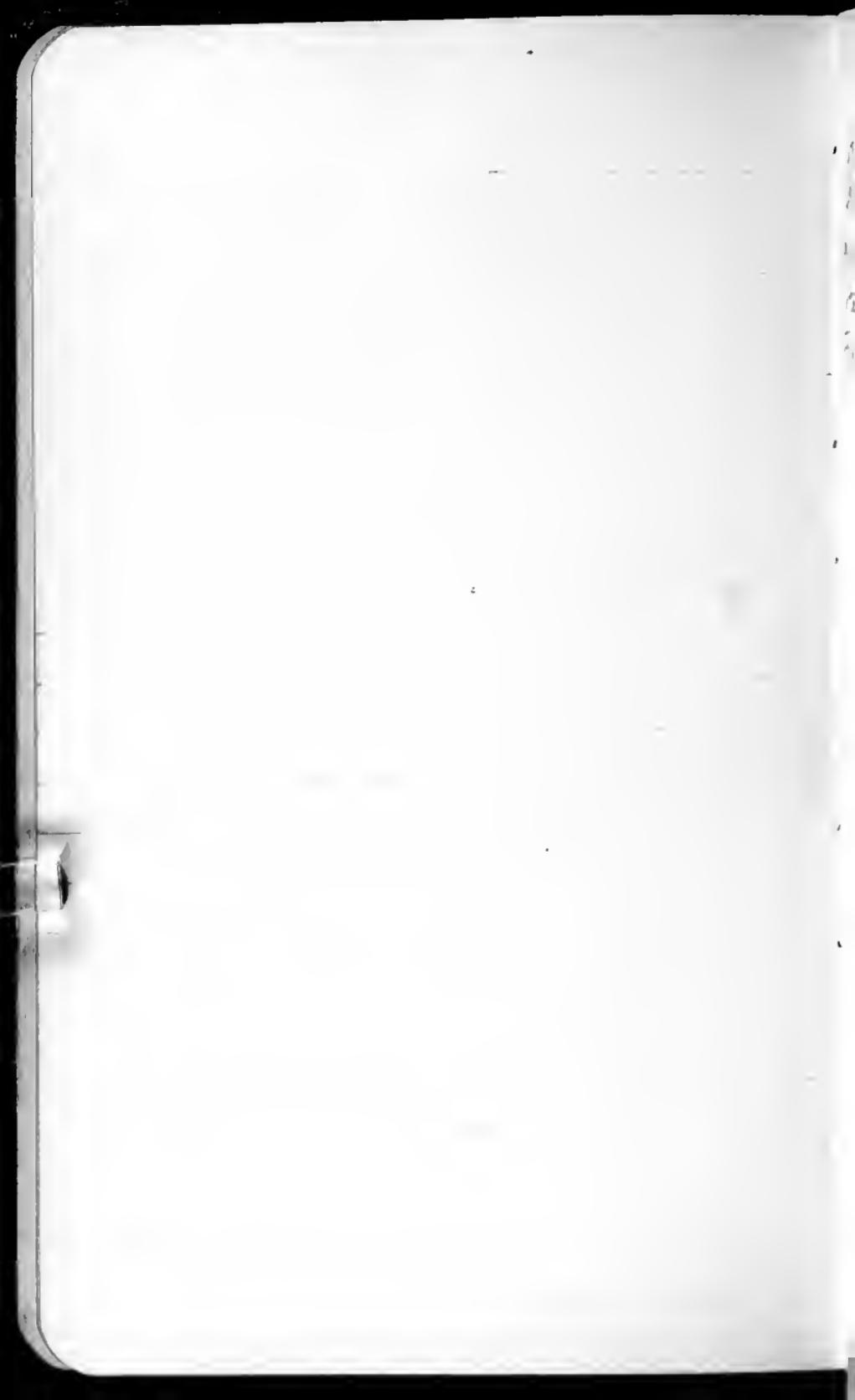


Nov. 26-1913, Saturday. Washington.

Left on B. & O. at 9:10 for Washington Junction to see the Triassic to the east. Just east of the station appears the Mount Taconic limestone conglomerate. Then a small valley with a fault and then the liga. and sandstone and shale of the Triassic. Farther east appears the Palaeozoic schists. The same which makes the Mountain belt to the west of mile of the Station. Best seen at Tunnel or Point of interest.

Took 2 shots of the Triassic.

Left Washington Junction at 10:15. Frederick station. Train late, left at 11:05, got in earlier at 2:20. C. Taylor in Frederick saw considerable of the Cambrian limestone (400 feet thick) + a lower Martinsburg (400 feet). All is much weathered + they considerably oxidized + discolored. Saw no more. Late fossils by Taylor says he has within a small Bioceramic (1/2 mile long, but often no like Belemnites) and other black, like - brown Taconic fossils but of the Martinsburg. This fl. is said to be 99% 2000 ft. The first belt is 1000 feet (Taconic) + as it is the Ridge to Frederick. After getting well north Frederick one road upon the Triassic but the same and then the Triassic on granite, and finally a large



distance of 6 miles west. First across the Catoctin
Ridge and then the valley beyond. Finally we saw the
outcrop of the Lower Cambrian made of Lower Cambrian quartz-
ite. These ridges are found so far north as
Frederick and Hagerstown.

The Lower Cambrian is nearly 4000 feet thick.

In these carbonaceous shales there is considerable intraterritorial conglomerate, which are more common in the upper zones of limestone. The pieces are then always less than $\frac{3}{8}$ of an inch and of any length, up to 3 inches. Though more common around 2 inches. Some pieces of the limestone are more often longitudinal though only 1/8th stand at various angles. Rock walls have "edge pieces" 2 or 3 inches apart, the rule with larger than 3 inches near the edge, - in making a undercut, due to wave action on shallower sea, say 10 depths of more than 100 feet and less than 200 fms.

April 27-1913. Hagerstown, Sunday.

Left at 6. A. M. to take the bus train on the Western Maryland for Smithsburg. It was dark and drizzling when we started and began raining at 8 to keep it a fine day. Let us go.

To the east of Smithsburg we saw the outcrop of the Blue Mt. with its Herkimer quartzites. The country between Smithsburg and the great Cenozoic hills at Security for seven miles is occupied by Cambrian deposits, and the other two miles to Hagerstown by the Beddoe town. I all the distance I could see no fossils in the seen and we saw none until we got into the Beddoe town.

The limestone, the Cambrian, are usually bedded with layers of light blue limestone and often zones of impure sandy green. On weathering the limestone cracks easily while the sandey bands come out as thin reddish plates that are hard a tenacity in appearance. I certain zones the bands character vanishes and one then has the zones of pure limestone or heavy beds.

The Beddoe town is not so well bedded but the zones of pure limestone and those with impurities are irregular throughout approaching the nodular

Conecuhoo
Gneissic
out in the

middle of Valley
west of Hagerstown
Again ridges
at North Mt.

Hagerstown.

Edgeise Congl. forming ridges.

Beckmantown marble forming
valleys.

Scoantom 15. = 2700'

Security Cement Mills.

Conecheague 15.

1600'

ipnot

Elbrook formation below
3000'

Magnesboro 55 - Specie.

1000'

Towystown 15.

1000'

Smithsburg.

ipnot

Harper's slate

1200'

ipnot

Wenonah 55.

800'

Blue Ridge.

Section on Bro. Blue Ridge to Hagerstown.

After Bassler.

Character. There is more iron, very fine inter-
nationally conglomerates but the shales are more fine.

H. C. Ogallala _{3000-4000' ft} Canadian _{2700' ft} Chazyage _{1000' ft} Wharkeine _{2800-3800' ft}

Montgomery St. Sandstone - Edon, Longin
2000-3000' Black + the black - thin
Apille St. + t. = Trenton

Chamberlain L. 5. Modular layers L. with
800'. Echinocephalus, Glyptina
Wavy thin black L.
with Nidularia sc.

Massive dol. L. with L. Sabellis
1000'. Massive dol. L. with M.
magnum + black chert.
Massive dol. L.
Congl. receptaculifer
base

Beekmantown 1500' thin, laminated
1900'. dolomitic L. with 100's of
thin wavy marble

St. Lawrence L. 100' thin L. full of
800' Lamprospira L. - weathered
with intercalated sand
Lamprospira
400' thin gray massive
L. full of finely arg.

Crookston L. 5' Shale L. with sand
3000-4000' Laminar - argillite
shale - L. Dolomitic
fusca - Lamprospira

Elkhorn 2000-3000' Shale
Dolomitic shale L.

Concretion

1000' - 1500'

Argillite } Red St. + red
1000' + slate.

225.

Turonian St. } L. + shale marble.
1000' +

115.

Antonian St. } white St.
1500' +

Hastings St. }
2000' +

Wenlock St. } Purple St.
1500'

100.

Lridian formation
Pre Cambrian Volcanic.

100.

6,000 ft.

Mc. C.

3000 - 4000 ft.

Character. True + more or less of any fine inter-
nating of argillite, but the shales are more large,
all of which seem to indicate that the water was
shallower and the bottom under the influence of wave
action.

Certain parts of the Bulturman town, lying directly
over the ^{terracette} dark talcose ~~beds~~ ^{terraces} but partially back on white.
The dense limestones often develop the septaria dikes
yellow while there may be as well an abundance
of terraced cracks filled with calcite. The thick
milky-white to white marble beds of Bulturman town
develop a peculiar radiating type of cavity that
is mistaken for vein cavity. This B. cavity however
was entirely due to weathering and may occurs
on the outside of the ls. and in the red bedded
clay.

of the front others, i.e., in a fence we saw some deer crossed it, with head down, nose near the impression before can forward through diastatic pauses, however, the man was in in $\frac{1}{2}$ the tick, in $\frac{1}{2}$ of the left side. These small ticks had little reactions formed in the small living ticks, ~~but~~ ~~the~~ ~~the~~ ~~the~~ ~~the~~ In the cases when the deer were hit.

It was the movement of org. has no advantage, in then after sudden shock, in such all \rightarrow when action and interfaces where in \rightarrow molecule by molecule with some \rightarrow smaller and larger structures, concentration. The latter group are distributed into living cells, in the body.

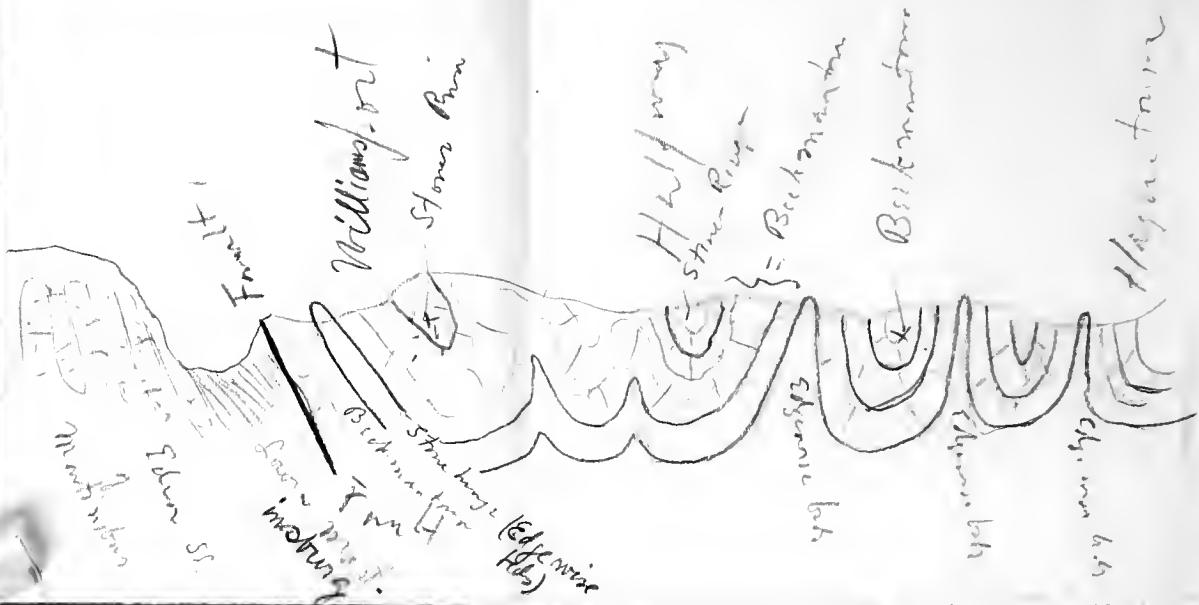
un.

Williamport
in May -
exposure
in fact
the
mainly
the
and
a very
matin,
which

new station in Williamport we see the well-
known oyster-beds on the lower Limestone, and
we see it in patches of the horizon.

We then pass much of the Lower Limestone with
its alternation of zones of pure dolomitic limestone
and intercalary zones of white ls.
that weather to a light grey and yield many
residual flinty pieces. The intercalations of ls.
are all marine zones and the pieces are nearly always
small. It is these intercalations of dolomites that
most often change into chalk with certain
marine ls. fossils bracketed out as older in the chalk.

Rasplus section from Hagerstown to Williamsport. Does with April 28-1910



as represented in our section, it would bring up a series of ridges, & some where the man was an infant + 1/2 mile, a big 5' 6" tall side. These small sides had their elevations, mixed in the lower layers, but the larger ones stand above the smaller ones.

It was the 1st - & at first I was afraid, in then after 2nd ridge, thick, in such alluvium action and influences of surface water, it would be impossible with some 100' lower and larger strata settle, unconformably. The last grain, one I picked out leaving colors in the cut.

April 28-1913. Monday. Hagerstown.

At 8.10 A.M. Took the Third car to Williamsport west on the Potomac. He then went on the Western Maryland along the track to see a long and fine exposure of the Martinsburg. Basler says the Martinsburg between 2000 and 3000 feet thick. In the lower part it is dull colored and all sand, changing in the upper part to marl and more sandy, and finally to thin and coarse bedded sandstones. The age of the lower part is Lower Middle Triassic and the upper is in the Eden but in part is in the Massanutten.

Just at the old abandoned Shuster quarry and Rock Station in Williamsport one sees the Marlboro or Braxton over-thrusts on the lower limestone, and one sees the great lithology of the horizon.

We then saw much of the Leetown formation with its alternation of a greenish sandstone and limestone alternation with intercalary greenish siltstones. These weather to yellow and white with sandy residual flaky pieces. The intercalations of siltstones are all massive ones and the pieces are usually small. It is these intercalations of siltstones that most often change into chert with sections of fine greenish bubbles cracked out in circles in the rock.

The intercations of conglomerates are not conspicuous although abundant enough. They occur in thin zones and thicker than 4 inches and are not persistent usually more than a few feet, but will reappear again on the same level a short distance. This the same with the pure limestones, except lenses of variable length. The circumstance of the white matter gives one the impression of water movement over the bottom of a sea. At times there was enough suction developed to break up the thin zones of lime and other times the current, motion caused up the layers to a depth of four inches rolling them in a line into spherical balls often like delicate pieces of glass usually lie in just this way scattered around.

At the time I have no evidence down the profile of the sea because the limestones are not stratified at all. The limestone is a constant bedrock which is continuous with the bedrock with undisturbed strata.

The intercations of limestones are most common in areas where the limestone is therefore.

The limestone has, or less of an alternation of fine and impure than sand, and is therefore more pure li. Here again the intra-montane sh. are present and often more abundant than the sh. These occur at the base of the Stone River.

Bassler is mapping the watershed of the in the farm of Mr. C. T. of the limestone and the residual soil. He says he has 30 different Ordovician sh. etc. Here he also uses the thin sandy and even the character of the farm land including fruit trees. These are for example to fit. Regarding the structure and thickness of beds, is taken into account and form of the soils.

Every now and then we came upon low ridges of older Cambrian sediments which reached to the Blue Ridge, and in Juniata and Mifflin near North Huntingdon. These are often angular sometimes near rocky streams, and at other times indicate old rivers.

In another place we saw a little stream divided for a strip. These values often in Pigeon and so the value of small beds sometimes considerably thicker.

At 2.10 P.M. we left on the B & O for Scranton



from where we walked to Draper's Ferry a distance
less than 3 miles to the west. It gave us a splendid
view of the Potomac valley.

Left at 9:12 for Martinsburg where we
stayed over night.

The Chautauquas is hard as brick as 400 feet, although
Barlow gives it as 800 feet and invents two divisions. He
and I agree with what we saw ^{from} ^{me} all the diameter from
within 20 feet of the base.

Along the S. & D. about $\frac{1}{2}$ mile east of Hartshorne we
saw the contact between the Chautauqua and Hartshorne.
This is described on my former trip, where I say, "that
the middle part of the contact here is a $\frac{1}{2}$ " m. wide
anticlinal fold ^{of quiet deposit} of considerable interest, which should
be visited here on the Chautauqua side. It is an $\frac{1}{2}$ m. high, about
the diameter is only about half that of the Chautauqua.

These pyramids may vary in a red or white.
The top surface is flat. The base one goes
down at an angle. Sometimes into a
circular depression in which there are grass
tufts and in places thin sand dunes.

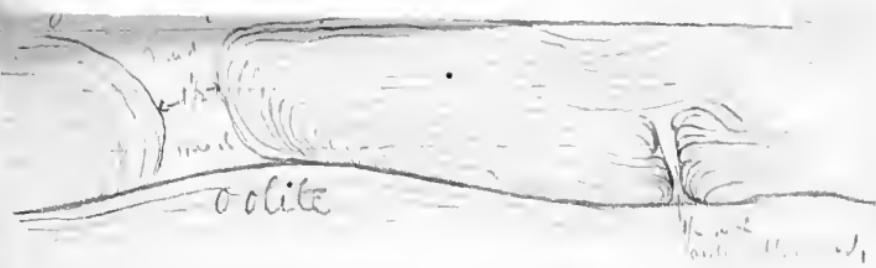
5+

10,
sharp
white
25 feet

m.

100

L.H.t.



In this cut there are many *Cyprinodon* to be seen and while a good many of them are small the others are as large as still I have ever seen. As far as I can make out they are all *Calcareous*. In places the material is not in *laminularia* masses but in sheets that are flat or ^(as in dryings etc) ~~flat~~ = ~~22222~~.

Basslin's interpretation of the section from Martinsburg to North Mountain



Hours April 29 - 1913.

These limestones may occur in a bed of white
or tan color or in other places there are zones
of brownish or reddish. Sometimes it is
interbedded directly over the
greenish. The dolomites are abundant in the Luttrell
town and in places this is common.

April 29-1933, Tuesday. Weather very
hot and dry. In the limestone about 100 ft.
the east of town.

The contact between the light blue limestone,即
Horn River and the Chautauqua limestone, very sharp.
The former is very bedded & locally fractured while
the latter is dark blue and nodular. About 25' or
above this is a good bed for Gasterosteus,
Leptostomus, Strewnia cornuta,
and Solenites, Praecorona a few,
Planilites, Planorbis, Conularia and Chonetes.

The following cut in East Town, near
North Avenue, 100 ft. above the limestone about $\frac{3}{4}$ mile east of Rock Hill.



In this cut there are many Cryptocrinus to be seen
and while at first these did not look like fossils
as they are still living I finally concluded that Cryptocrinus must
be organic and is not algae. In places the material
is not in amorphous masses but in sheets that are
flat or ^(as in dredging stone) flat or ^(as in dredging stone) flat.



Near Tatts station we had much evidence of shallow seas. First there was an abundance of corals; three zones, one of which had a thickness of about 10 feet. Second the coarse shales. Third an abundance in many zones of conglomerate; Fourth limestone; Fifth zones of white calcareous dolomite. The heavy bedded generally and laminated darker limestones are made up of ooids and these are often white with pink interformational conglomerate lenses of small size. Sixth in a few places some large mud balls ^(6-11 ft. thick) in ⁸ the beds, seventh zones of interformational dolomite. The last ⁸ ³ zones are of some dense fine blue limestone. In some ³ of the yellowish yellowish brownish the mud balls being mixed and are iron stained.

This formation at Tatts is by all means a stone floor and a few layers have appeared in one of the lower parts of the valley. The lower part of the dolomite consists of the first two zones of these seas. One is made of a coarse ^{yellowish} limestone with a number of ooids connected with these beds and the fact that they ^{occurred} ^{occurred} in the interformational dolomite. Fossils were not seen in any of these beds. The limestone is highly calcareous and has a dolomitic reaction. Often it is almost pure ^{lime} and has a cutting force.

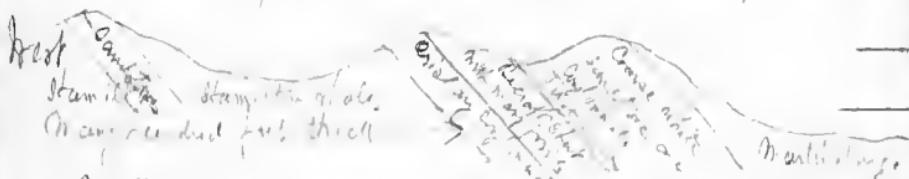
At N. Mt. the Seeroff has a thickness of not less than 32 feet. The fossils are from the middle. Ediaceras are common at about 25 feet.

At Castle Town the G. Mary has a thickness greater 20 feet. It can be well seen on the south side of the town. In upper blocks there are not large thin greenish bands of Actinaria, very delicate and not very hemispherical, and small rounded plications. ^{To} a fault overlying the Brantford

No. Tuscarora occurs at N. Mt., British outcrop where it lies above the G. Mary and is against the same at N. Mt. When visible at Westerville it is ^{about} ~~not~~ far thicker in places. All of the Tuscarora may therefore will be exposed.

April 30-1933. Wednes., North Mountain.

Left motorcycle on 6:30 A.M. trail n.
North Mountain. Traveled a mile south west to Red-
ville. From rock road to village, the rocks are sand
stone, and the road was 2 ft. wide. This road
should take Hamilton with fossils along into the village.
Here there is a bank made up of the hill ^{north} ~~south~~ ^{Hamilton} and
has sand stones. Chert & conglomerate (white with small rounded
pebbles up to 3 inches across). On this road much white
sand rock occurs, fossils. The section is as follows:



In the Diabase a lens of sand no fossils. Seen & cut.

In the base of Chiltonella assimilis, Spirifer concentricus
ellipticus a flat lith iron ore, about 10 to 20 feet
iron ore. The thickness varies between 10 to 20 feet.

The limestone above is a heavy bed of white
grey limestone and dolomite. It can be separated from the limestone
below and then the Chiltonella assimilis.

now, the thickness is not less than 50 feet, a small
thin band of dolomite is on one side and on the
other a thin band of dolomite.

This is not the regulation Coeymans but rather the lower
beds and probably in the Kersan above the cystic zone
and about the time of D.B.P. Spathidion bed. In this event
there may be a break between the Coeymans and the Tidiway.

At Bull Mountain - the first formation to come in over
the Chisholm is the latest phase of Chisholm, ^{a series of green shales and gray of fine lime} I am not
certain of this, ^{being the Chisholm} as Stylifera occurs here also with an
abundance of Ostracoda. This lighter colored Chisholm has
a thickness of no more than 35 feet.

near 100 ft. The black Marcellus with large con-
cretions of iron pyrite being pyritic shale, and
that are mostly reddish, in size 2 or 3 in.
usually are. Some of these limestone beds are
~~too~~ ^{not} ~~limestone~~ ^{beds} ~~are~~ ^{limestone} ~~limestone~~ ^{beds} ~~are~~ ^{limestone}
the thinning, though the shales have often worn more
narrow around the ends. On either side the shales are bowed out.

Cherry Creek, or 10 a.

The creek has cut in a wide track ^{here at the stream 1 mile} and has ^{now} cut down considerably of the old bed rock so that there is now
a fair thickness more than at any previous time. This is near
Baptist Church, one mile west of Cherry Creek.
Reefing at one place we have at least 10 feet ^{and} ~~of~~ thin bedded ^{only} lime. This seems to agree with the
Tomboray. But a lot of small Meristella.

Then follows upward a series of iron reddish rock
blue thin bedded limestone with ^{thin} ~~thin~~ ^{lime} ~~lime~~ shales. This series
is 55 feet thick. The basal part is sandbedded ^{but the specimens} ~~lime~~
by granite. The upper 20 feet are decidedly brownish bedded

from N. Mt. to C.R.

Distance 5 miles in a straight line.

West mt.	Cherry Run	Cumberland
Philately mire	? <u>50</u>	Oristone (Hemeroc 354)
<u>35</u>	<u>65</u>	Bearfoot about
absent	36	Barren ¹²⁻⁴⁵ 79-13
absent	<u>15</u> ¹⁴⁰⁰	Step ²⁹⁰ and ¹⁰⁰⁰ Ind. Coal
absent	? <u>300</u>	Tower ¹⁰⁰⁰ m.
absent	? <u>300</u>	6 m. ⁸³⁴
<u>50</u> Hedgeville	? <u>100</u>	Tower ¹⁸⁷ m.
<u>85</u>	<u>956</u>	Junata ⁵³⁰ 2353 ft.

850 ft in 5 miles = 174 ft in 1 mile. h.m. - C.R.

3350. " 71 " = 47 " " N. Mt to C.R.

2400. " 55 " = 44 " " N. Mt to C.R.

Stopping at the Spanish Hotel, Hanover, Ind.

Lorn

This horizon is often ^{called} Lornian. It is made by bid. galeata.
Next higher is the ^{called} Fortland $\frac{1}{2}$ 6 feet thick. It

is a series of thin bedded sandy lignite layers derived from the
^{separated} ^{and} ^{thin} ^{black} ^{shale} ^{bands}.
reputation charts as one sees about Cumbria and Lancashire.
macropelaea is very common in Lorn 15 feet. It has
here a decided tendency to rot down into a porous
sandstone with the fresh air.

Bearcroft 65

dark blue grey ^{disorganized} thick. There are
very thick beds below for about 16 feet full of ^{disorganized} shales. Then a
time of thinner beds separated by shale through the whole
mass. At the top ^{disorganized} may meet shales 2-3 feet thick.
At the top are thin beds like the below about 25 feet
thick. Towards the top the ls. has considerable sand quartz little.

The ls. horizon is at the base of the
stream. Thickness not given in the section. It is a
sandy dolomite rock being more or less
At least 10 feet ^{at the top} may be seen. The dolomite is not in the
sense, nor did not care not to see if it is dolomite.
The top of the lower dolomite may be seen as a
mass in the new area. It is about 10-15 feet thick bedded
sand grey dolomites alternating with many greenish
calcareous dolomites. The dolomites may
be 20-25 and 30 feet. At the top is quartz little
conglomerate.

Farther west these red beds have vertical fillings instead
of calcareous concretions.

The natural concretions are of iron or other acid ~~lignite~~
stone like materials than the limy concretions of the fine, In the
proximity of art. clinal and sand at makes these beds are exceedingly
mashed. Some of the harder limy beds are curiously contorted
mag. Took a picture of one of these contorted beds. We often have
harder layer or folded while the softer beds below are run through
into the bottoms of the concretions. As a rule the iron or other
beds ^{run} into the crevices but in some cases are fractured. ^{run} These
beds become more when the beds are much mashed.

May 1-1913 Thursday Hancock.

Started out to walk from Hancock to Jonestown along the Eastern Maryland R.R. Checked my luggage at Cumberland.

In the first cut east of Pound Top ^(or opposite mouth of Loney) we see an arch in the red Galena. The sandy dark red bed are full of long encrustations and these are arranged vertically. They are not beds, I suppose but encrustations of lime scattered by a strong and sinking water table. ^{and the dryness and presence of the zinc,} Now that they are exposed to the weather, ^{above the red bed} water flows along those vertical grooves and changes the ferric iron to the green prisms given. At 10 feet we exposed in the center of the arch on which are about 10 feet of thin bedded red shales. ^{with similar modular growth.} The grey bed ^{above the red bed} here are also somewhat cracked and splitting. The Stromatopore rocks can be seen going through a bed 5 feet thick. The sun cracked zone is very thick at least 50 feet. Lepidolita ^{are} common here in the sun cracked beds. The cemented rock follows or lies above the last of the red beds.

Opposite Lee Mills, Lee or at Locality 53 there is good exposure of Clinton shales with the sulphur pool. Here are my large Bryozoa, have taken a piece of the ferruginous limestone.

Beech & will be fine because of the considerable
thickness of very thin.

Tonorrow 2nd May 1-19.3. May and.

The Oriskany is ^{about} 2 ft thick with no
concretion of the Beaufort. As a road way area is covered
between the Oriskany in place and the Beaufort and
therefore impossible to find the exact thickness of the
latter. Then too to say there is no Beaufort here cannot
be said from the railway cut, but if it has been
contacted on the hill side all may be correct.

The Oriskany is 12' thick

The Coeymans as 8' 1/2 thick

the Seneca as 27 1/2 feet

Looking across from the Cacapon station one sees
a road way on the ^{higher} hill side cut in at 12' - 13'
thickness on the railway. Here it appears ~~to be continuous~~
as of the Oriskany lies adjacent to the Beaufort. And
thereby about this contact and the stated thickness of the
Oriskany (the Lower Oriskany or middle affording

Left Great Cacapon for Cumbest and at 6:36 P.M.
Arr. Cumbest at 8:10.



May 2-1913. Pemtaland.

Started into the hills back west of the Tuniata.
May 1st - ^{the 2nd} sandstones of sandstone of are vertical tubes as are sand
yesterday in the Salina, some or some have vertical lining
cavities but they are rare. The vertical tubes ^{however} are common.

The Arthrophychus farfare are found in the hill, that
at 35 feet beneath the shale ^(or true top of the) Tucarona. The elevation of
Euston time was set then are no Clinton fossils. These
Arthrophychus occur as nodules on the outer surface of
the sandstone just above a ^{thin} ^{thin} shale bed from nothing to a
inch in it. The Ohio group occurs below this in the
shale for about 15 or 20 feet no fossils.

The bed between the first Tuniata sandstones and
the older Tucarona can be determined ^{above} by the rock where the
shale comes out and where tramps stop. This contact may be de-
termined further ^m towards Pennytown ^{and beyond} County and along the B & O. Railroad at
the end of the Brucy's residence line road. It is rare here
the ^{red} ^{white} Ohio rocks are always separated by
the evidence of the orange color.

There must occur here the upper part of the
decolorous limestone because the Tucarona
of Medina and the Tuniata cannot be other-
wise the Ohio ^{is seen in Mansfield} limestone. Elevation before in
earliest Richmondiens and continue well into Silurian
Time.

I can see no evidence for calling these fossiliferous limestone
all of a Teguano. Why it should be taken from the Teguano
is one of H. M. I. 's imaginations. When does rock thin he
has some residual clay between the uppermost layer and
the stratified section. and then he interpreted as an old re-
sidual (Laramie) clay. His residual is today.

a muddy limestone
is if the lower or even a small sand streak,
the Teguano is hard blue limestone in many places

if the limestone is never broken. Then it is an
argillite or a ^{yellow} ^{green} ^{purple} ^{blue} limestone that during weathering
grows white.

This Spalding, living near Mt.,

[DBB = Devil's Backbone -
ridge on W side of Wills Mtn
+ E of Wills Creek] C. MacC
.5 km NE of Neigh barn

The bottom surface of the
water... decided... remarkable. Also see the immediate
doc 107

MARYLAND GEOLOGICAL SURVEY.

VOLUME I, PLATE XII.

W

E



VIEW OF "DEVIL'S BACKBONE" IN LEWISTOWN FORMATION,
NORTH OF CUMBERLAND, ON THE BALTIMORE & OHIO R. R.

There were many fine exposures
and the revolution took place continuously upward.

I can see no evidence for calling these four-fifths li.

ridge on W side of Wills Mtn
+ E of Wills Creek] C. Nacc
.5 km NE of Kreigbaum

The bottom surface of the Groomans at the D. P. B. action is decidedly subangular. Also so the immediately adjacent top of the ledge.

But some way, says Soper ^{concerning bed} in the thin reddish layer over the base of the D. P. B. section, about the

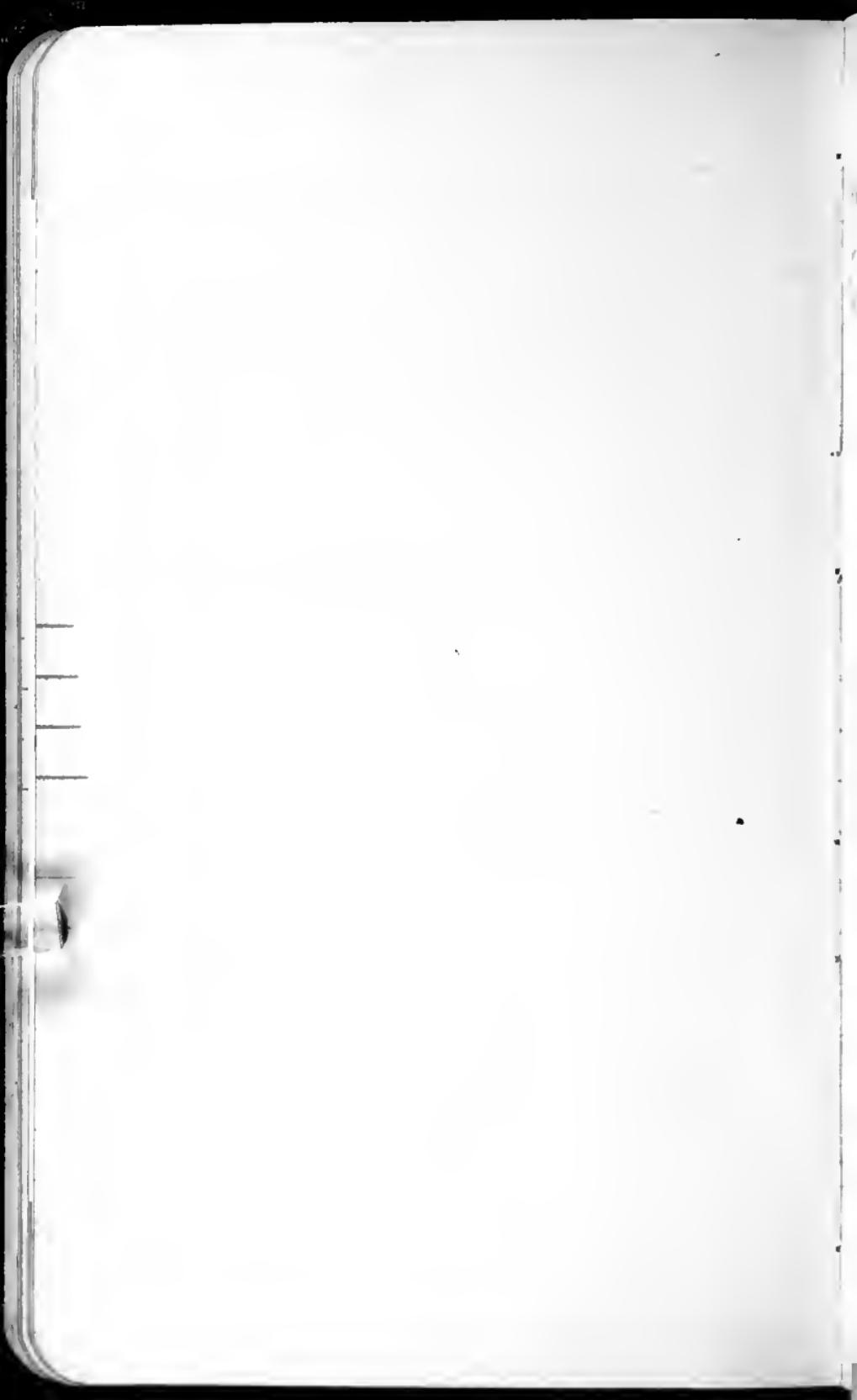
The Griston limestone has still other thicknesses again very varied in rock material, hence could not be fully finished today.

Oriskanyville, Md.

In the ^{new} Oriskany bank of the Potomac May and is a part of the old Griston. It begins in the River and shows the base of it. From the beginning of about 8 feet. Followed by the New Marlinton limestone in white streak with a thickness of 37 feet. *S. macrurus* goes up to the white streak.

The new Marlinton shale begins here and hard ^{d. b. l. b. b. t. b. d. t. p. m.} black ^{dark} streaks as on 2nd ridge. There is no transition. The thickness is between 33 and 35 feet. On its uppermost portion

I took a thin cut of the lower Griston which at once at ^{the base} shows flat shells in a 2 inch band followed by some ^{blue} shale like that below for a portion and then the regular brown beds characteristic of Griston.



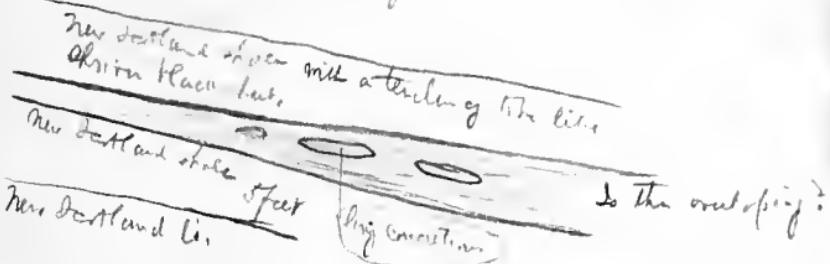
From Conigerville walked over to Cash
Fally. The exposure is as always and is getting
poorer in fossils. Then took the Frostburg car
into Cambaland.

The smallest size of tree seen in the Eastern
Maryland cat. ^{the}

May 3-1913 Cumbaland.

Left on the 7:30 m. for 2nd bridge to walk from there to Kegs.

There is an irregularity of deposition in the New Dartland shale at 2nd bridge.



Most of my fossils found came on the upper part of the lower shale. Some come from above the overlap ^{bottom} _{my} limestone.

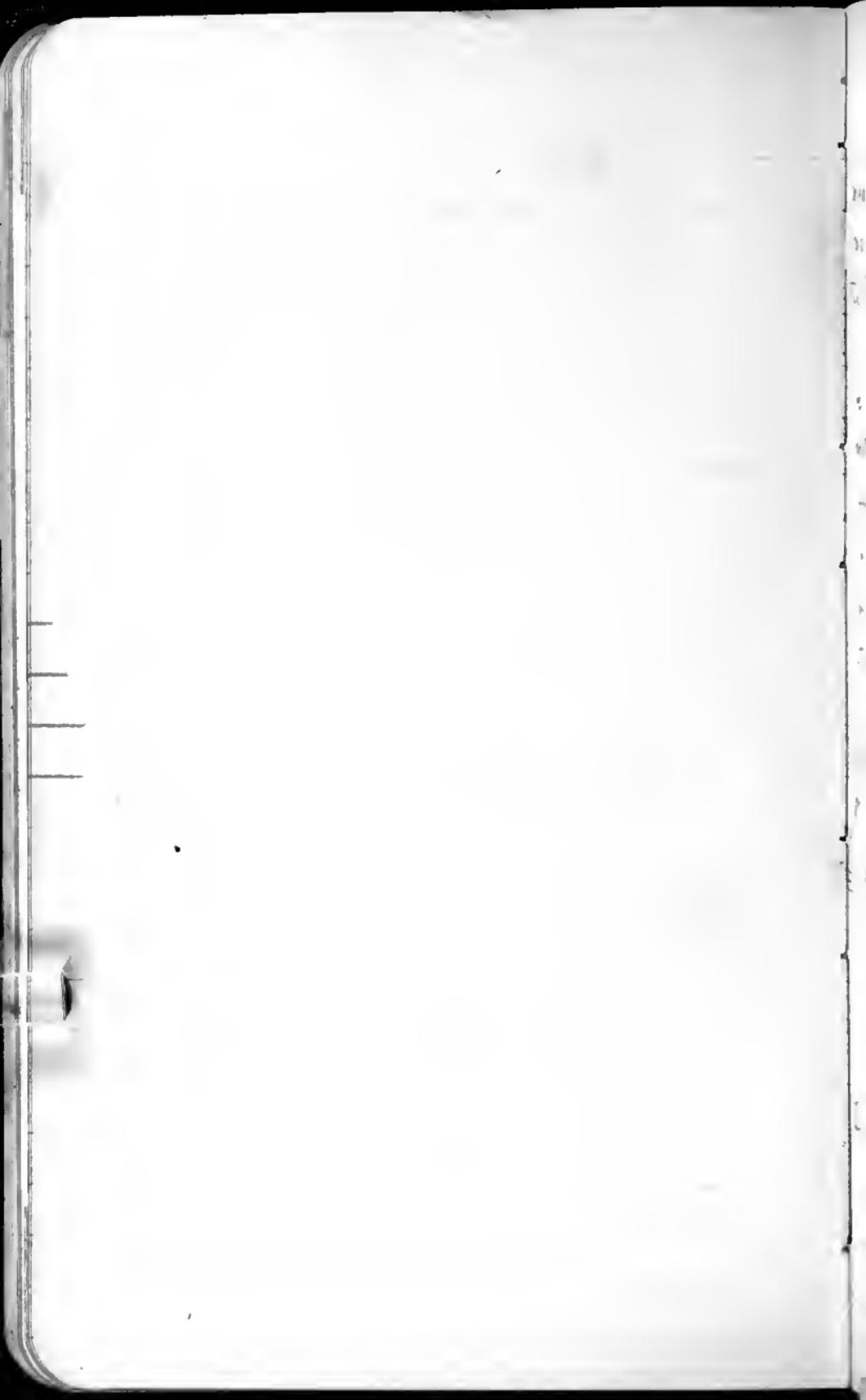
Then too these upper rocks merge with a short transition into the older rocks ^{on the border} _{the} limestone.

If the rock above is as there is a residual surface between the layers and limestone. Gneiss will come down to the base of the latter.

New Dartland shale with a thin black band. There is a residual layer in the center of the base, which has nothing to do with the limestone.

There is no development in the new quarry in the limestone. The older one in the limestone has a forward horizon or layer and deeper than one,

Left Kegs at 11:35 p.m. 3rd June.

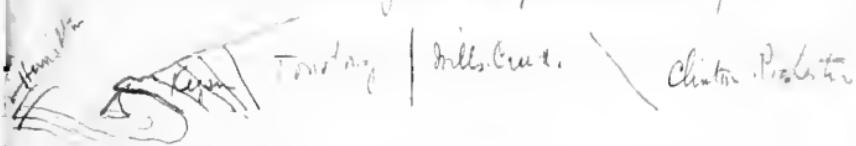


Potomac - Pintz Section.

The dolomitic limestone for rock occurs
more or less throughout ^{the middle} 300 ft. of rocks. Then there
are occasional zones throughout the rest of the Hills Creek, but
the tendency in these layers is to become more thin bedded dolomite.

The Potomac-Kesler contact is as sharp as can
be. On one side are the waterlime ^{doest not} laminated rocks almost
without fossils, and on the other ^{the blue} fossiliferous beds with thin dolomite
bands. This difference however need not be so great
as due to a new sea invasion on the Potomac
bank but may be due to a change of the sea 25 to
50 feet deeper in Kesler time. It would seem ^{granular calcite inserted here.} likely that the

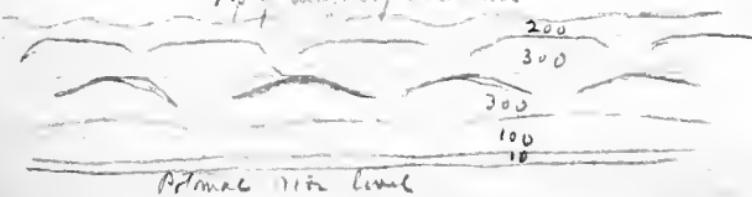
All of the lower Kesler and the rest of the lower
Devonian is cut out by a steep northward fold.

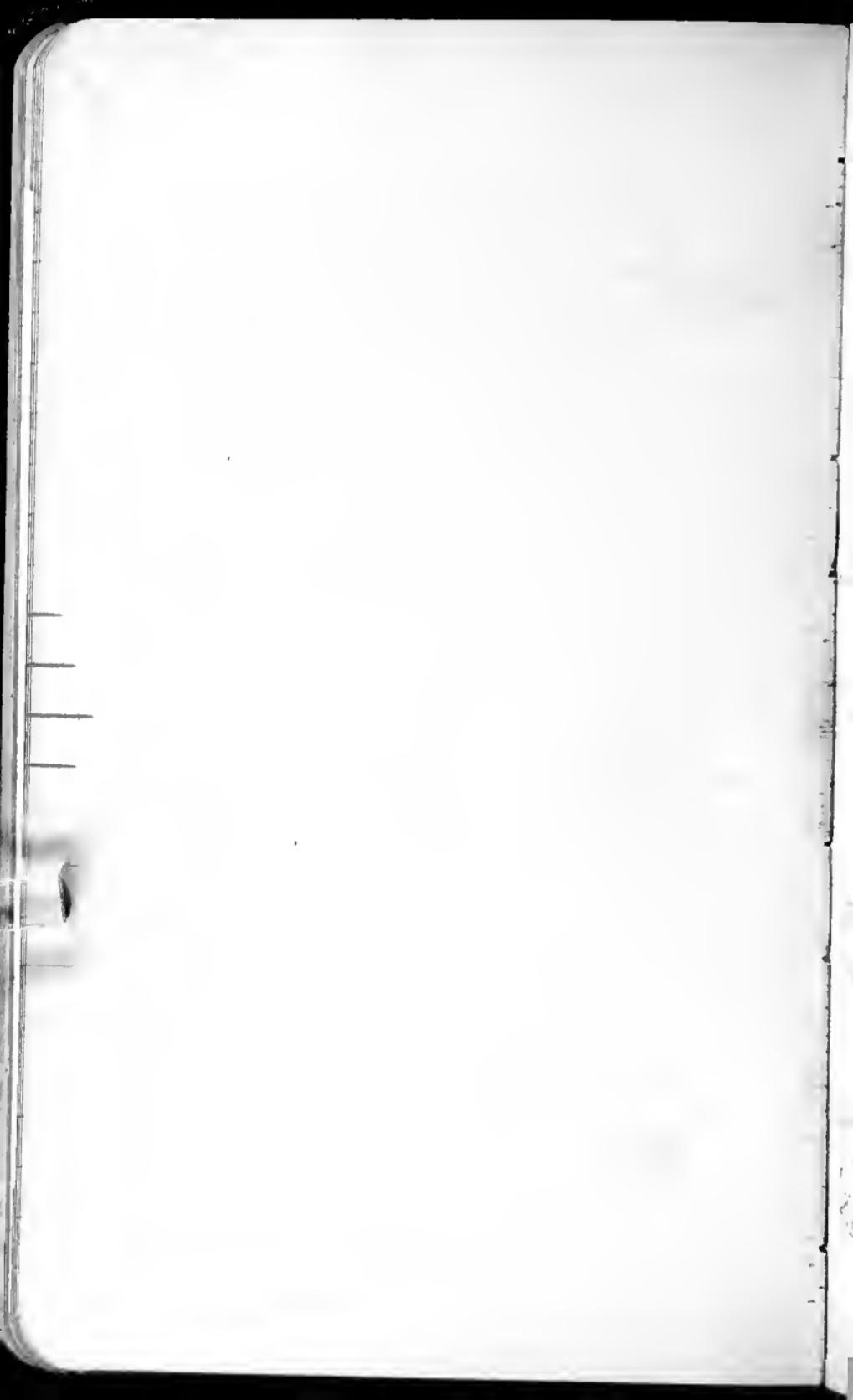


Left Potomac for Cumberland at 6.30, P.M.

Looking at the Allegheny Front on Potomac one sees
the following river levels, or terraces

Top of Allegheny Platform





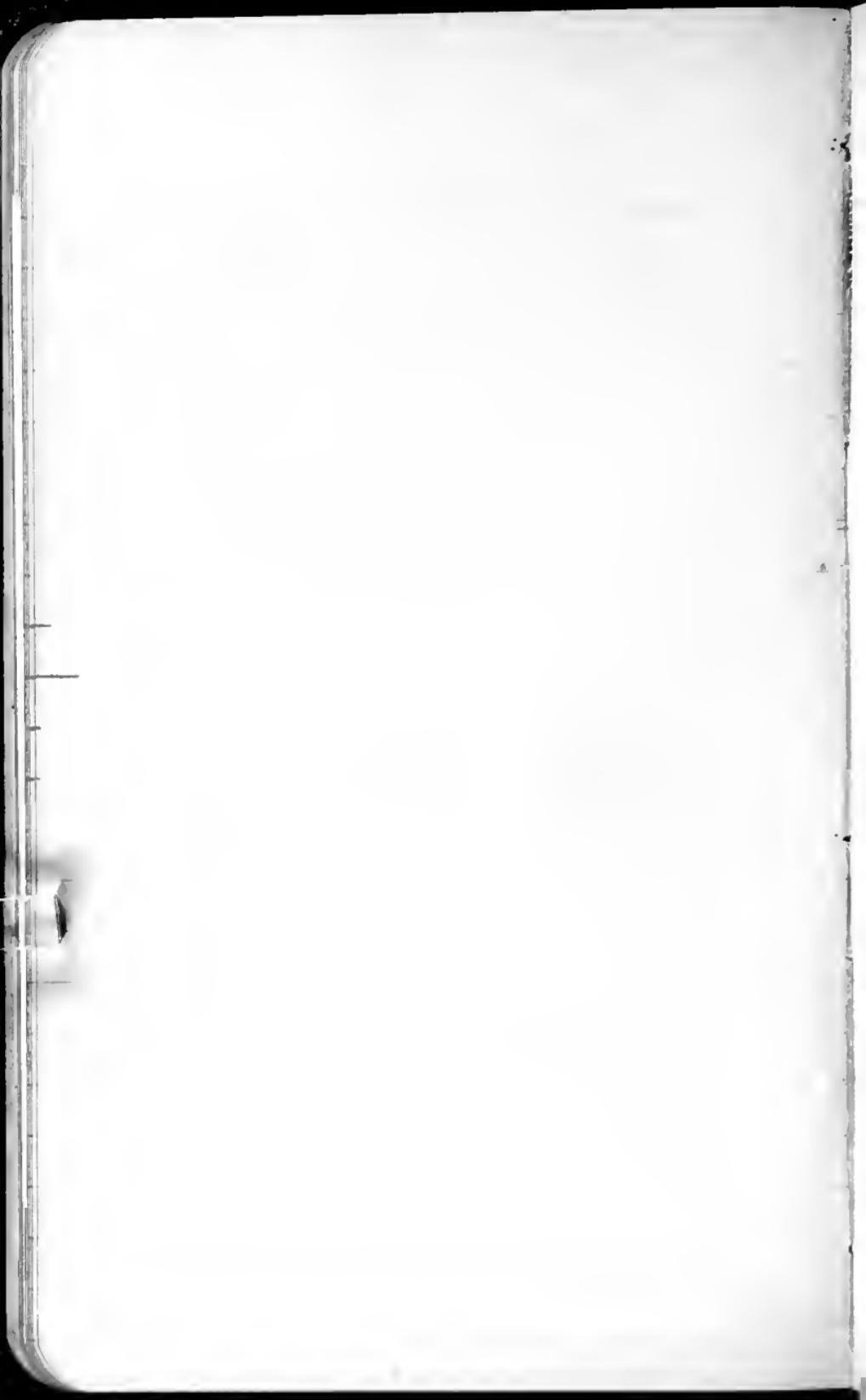
May 4-1913 Sunday Home to New Haven.
Left Cranford on the P.R.R. for Allentown
on the 7.35 A.M. Train. Will get to Penn. Jct. at
8.05 P.M.

What is the age of the red shales and sandstones
interbedded east of Lancaster, are they Cambrian
or? They ought to be so.

How far east of Lancaster does the
Cambrian extend?

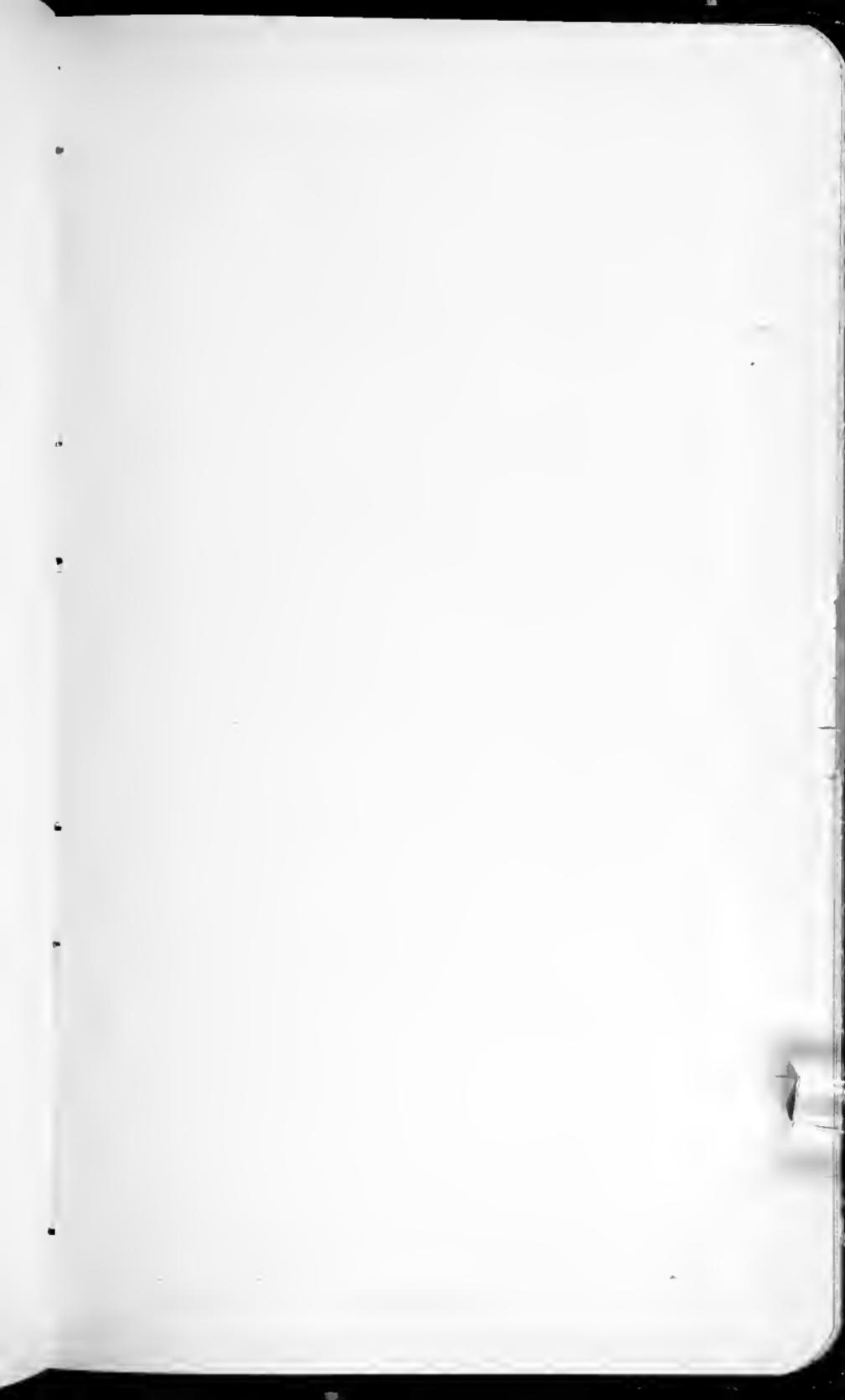
When we are on the Blue Ridge the lime-
stone at about 20 miles west of Philadelphia. Is not
less than mean?

At Gap we cross the 1900' level. South
Pennsylvanian or the Blue Ridge. About 46 miles west
of Philadelphia East of the Gap occur quartzites,
then dolomite which may be Cambrian.









Film I

- 1 ~~Spores~~
- 2 Glauk. plants (Pleurocym) on Gneissic ~~Spores~~
Washington Ent. to Nat. Hist. Park.
- 3 Stand of 16 ft st. shiny Glauk. rocks on Pittman
and arg. changing below into white sandstone. Boulders.
- 4 Anacostia (Wood Dale Road) in 1 to 1 fine sh. 1/2 feet
d. (1 ft. in 10 ft. 1/2 in. to 1/2 in.)
There a grayish Lopigite (1/2 ft) and the Lopigite
gravel.
- 5 Red Triassic sandstone (Grid 26) over Washington 2. - 3.
About 6-7 ft.
- 6-7 dolina
- 8 Triassic ls. comp. 33 feet. 32 sand st. Lancaster
- 9 Same as 8 but in fold - Tomstown (L. Camb.)
more common about one mile Grid 27-1913
- 10 Veracruz M. near end of Barbara Ferry Grid 28-1913 I.
- 11 " " same with one Tuc... To show folding.

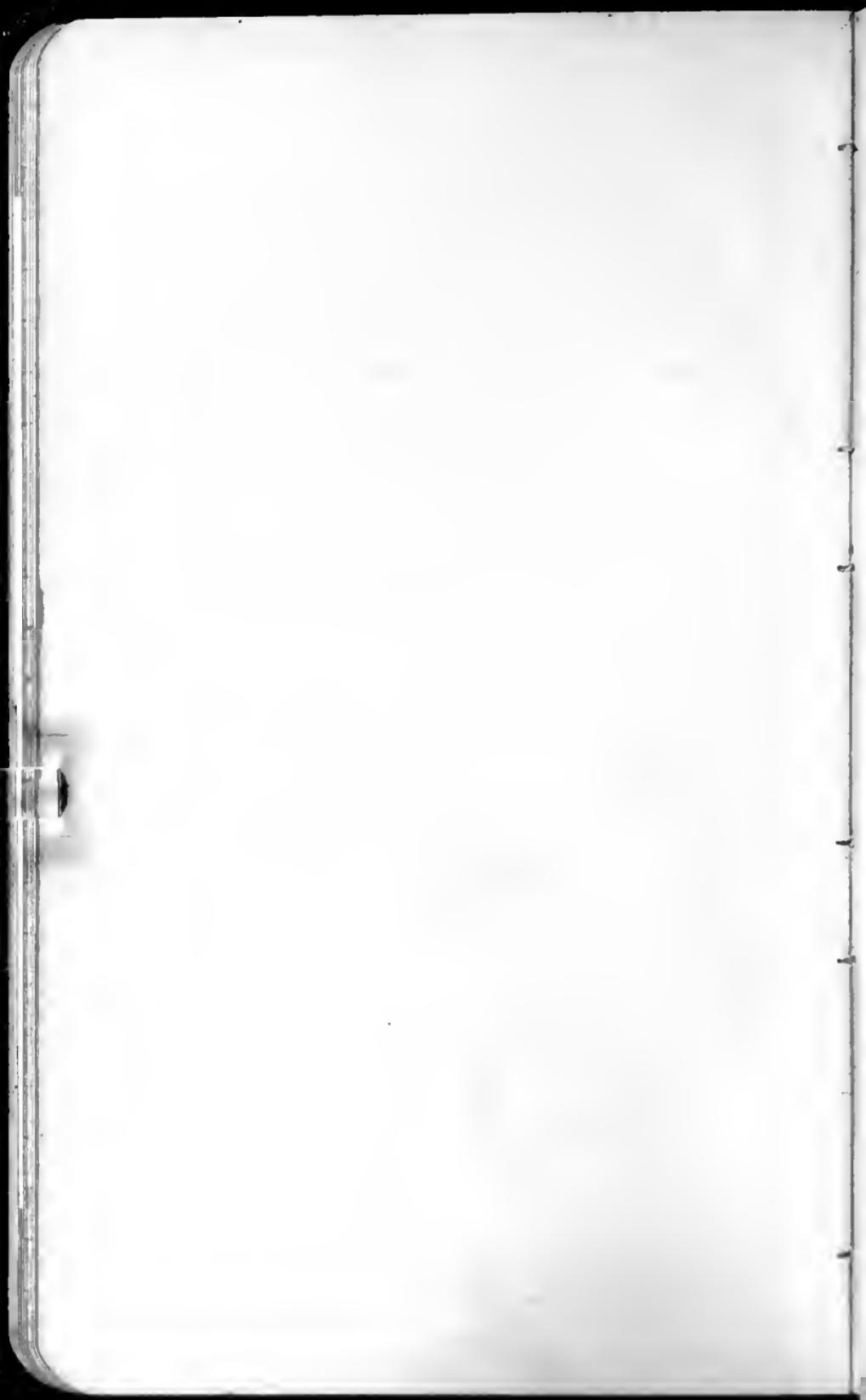
- 12 Schistose and slate in many rocks just east of M.
up to 29. A fine illustration of schist, reddish and 

Loses due to undriformation.

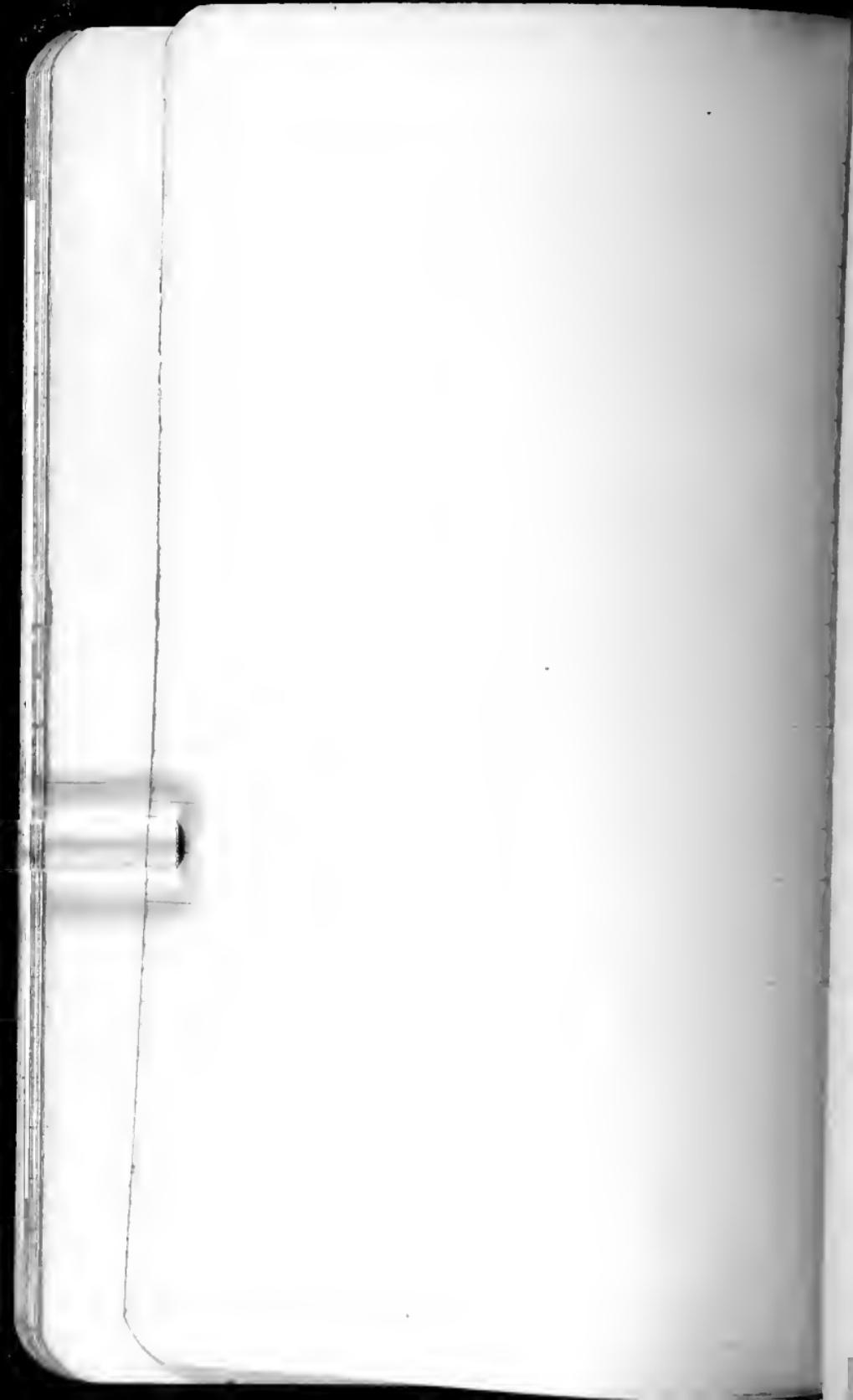
- 1 Film II, ~~examined~~ Strom Riffs at Tott. In center white and undriformalized concretion. 32 ft. T. 11 feet.
Both are practically split.
- 2 Lm cracks near Tott,
- 3-4 Ripples seen Tott. 3 ft. 4 fair
- 5 Cryptogram 400 feet above base of limestone.
2 miles west of Tott. 5 and 6 ft.
- 6 Cryptogram down, Gnd 20-10 3. 8 feet. drilled.
- 8 Aug 1. Near Round Top. Caliche lime concretion, in one Limestone
10 feet thick 32 8 ft.
- 9 May, Found in Salina at Round Top 50 feet 32 thick.
Note the crushed beds in upper part of bed at top. Last of red
beds in crushed and. To left come on the cemented.
- 10 Arkane Concretions, Round Top. Heavy bed outside of each
marked. Note oxidizing of green bed around arch.
- 11 Salina sun cracks. West of Rock 53. Smooth surface
110 ft $\frac{1}{2}$ second.
- 12 Near Townsley. Picture of bed Cenozoic age,
as can be

Film III

- 1 Aug 1. Concentric and dilute structure in Limestone one mile east
of Townsley. Look like Stromatopores today, but the bedding
can be followed through over the bed. Picture no good.
- 2 Thin bedded Limestone showing piling. Near Townsley.









12/31⁰
2

(4) feet Bear's
7²/₆ 25 " 2 " Portland
5 " 30 " German
20 " 2 " " " seen.
33 " 2 " " " (atty)
10 "

16 5
13 2
13 3

JT 24 00
22 0
2 0

18 0
1 0

71 | 33 00 | 0 6
| 28 4 |
| 5 1 |
| 5 9 |

<u>Romney</u>	= <u>Hamilton</u>	doc. 107
<u>Onondaga</u>		
<u>Ridgley</u>	= Upper Chillianian	258 feet.
<u>Sharon</u>	= Lower Chillianian	90 feet
<u>Bearfoot</u>	85-125 feet.	"
<u>New Scotland</u>	12-45 feet.	
<u>Cochranes</u>	9-13 feet.	
<u>Kesler</u>	270-290 feet.	
<u>Tonoloway</u>	= Shipton Dolina.	} 1000 feet.
<u>Hills Creek</u>	= Dolina	
<u>Clinton</u>		
<u>Thickness</u>	584 feet. 2500	} 834 feet
<u>Tuscarora</u>	= Medina	
<u>Thickness</u>	287 feet.	
<u>Juniper</u>	= Richmondian	
<u>Thickness</u>	530 feet 370 seen - Hills Creek.	

1890

Pennsylvanian - Permian

{ Dunkard 400 feet. = Permian.

Onondaga 238 feet.

Cincinnatian 630 feet.

Allegheny 325 feet.

Pottsville 296 feet.

1285
T. Catt.

{ Church Chazy = Right Tennessee
800 feet.

Greenbrier = Chester
227 feet.

Pocono
258 feet.

1280
T. Catt.
5500 ft.

Harmontville = Catfish
1900 feet.

Juniata = Portage-Chambers
300 feet thick.

	400	Perm.
	1489	Perm.
3,174	1285	Miss.
	7050	W. Miss. 6. P. e. e. Kingsport. 90-2660-2080-2300
	1650	Miss. Ques. 170-500-1000
9,1521	821	Lower Dev.
	2121	Silurian
2,651	530	Trematina
	2500	Cambrian - Marlboro
	1300	Mid. Ord.
	2000	Lor. "
	1600	Q. " "
	4000	Up. Camb.
	4300	Low. Camb.
8300		Paleozoic.
31,546	31,546	

Friday Sept. 11-1918 3022 ①

Left Cumbria and I had at 8.24
A.M. Arrived at Washington Junction
at 11.27.

Song east from the station.

Within 100 yards of the Washington
station one begins to see the Precambrian limestone
fragments. It is made up of a considerable variety
of limestone from highly crystalline to aero-cryst.
but more often of magnesium type which
is very rarely. The dark blue limestones are rare
and the thin banded or yellowish-green
are more common. In none could I see very
marked fossils but occasionally traces of organic
forms. All of the few are but slightly
marked, all are subangular usually ; in
quadrangular fracture but in certain beds
the *Yeller*-green are also found. All of these
varieties of limestone can be differentiated by the
Incan and the Italian between 11.27 a.m. and
North Mountain. On top they may show fine
coleusian sand between 1/2 & 2 feet. All
are firmly cemented by a fine brick red sand.

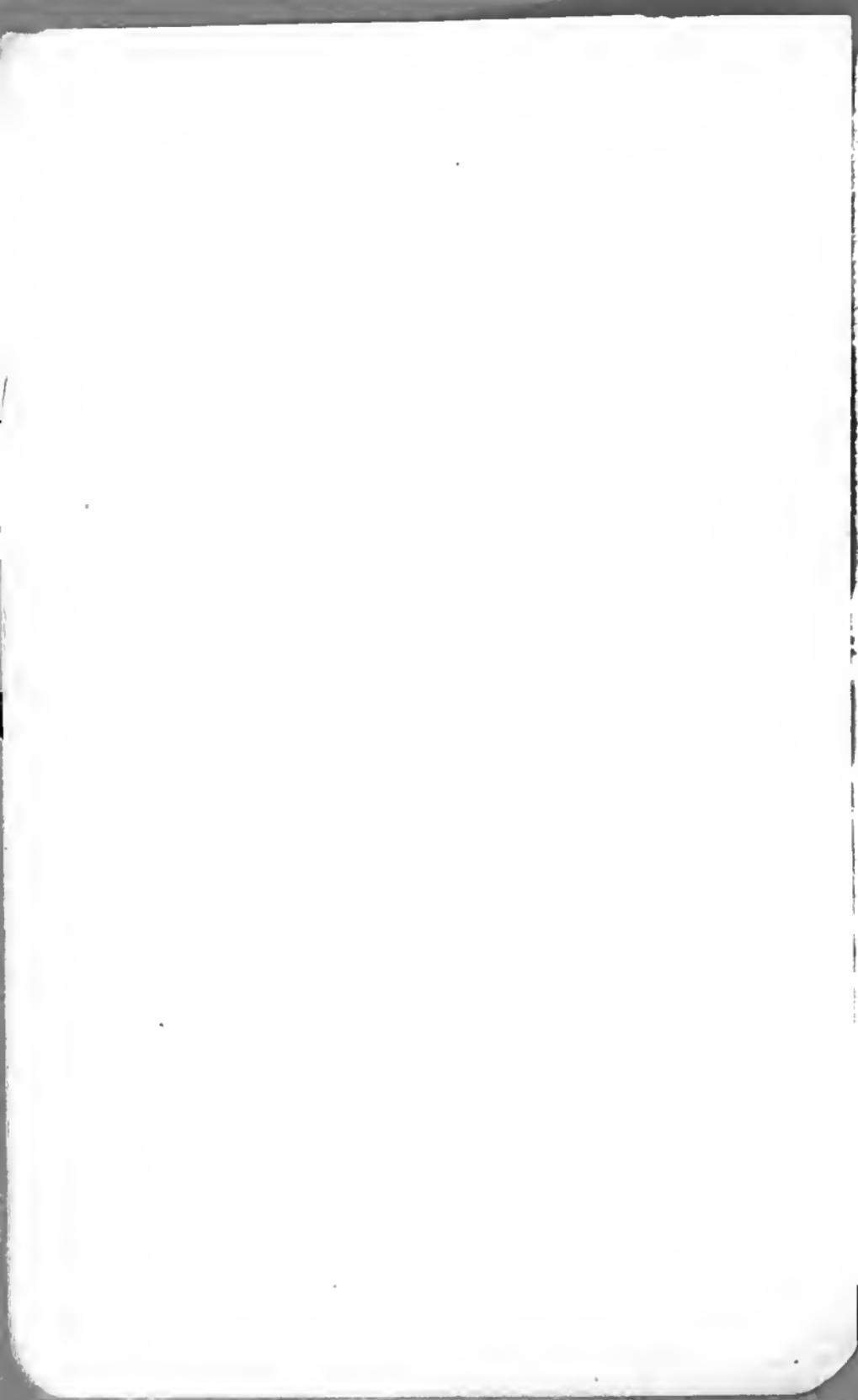


In some parts pastures are situated in
weathered places one sees distinct bedding. The
dip is about 30° $\frac{1}{2}$ to the ^{south} west. The
surface is very flat. In certain of the beds
the pieces are small in other large, others
the pieces are flat, and finally some are
small and cemented together. The latter
^{red layers} being only about $1 \frac{1}{2}$ feet thick, dip out obliquely, ~~at~~ distinct bedding out the
dip to the west.

In the present weathering the red beddy cement
is the first to go or that the exposures are very
rough. The limestone lies then weathering
all foliage from making the surface still
more rough.

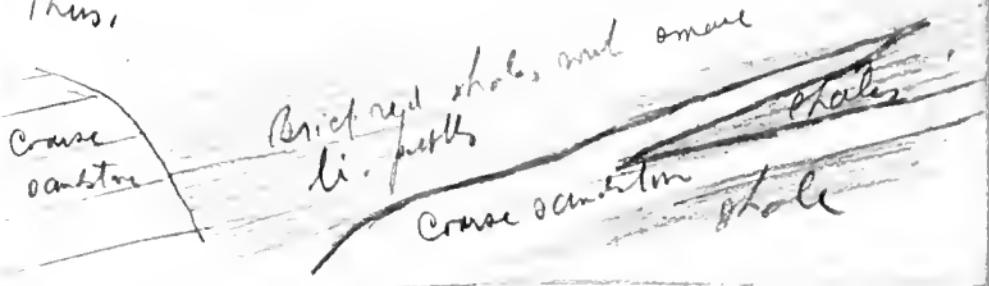
The dip is changing to about 20° .

These conglomerate beds continue for about one
mile east of Brasher's farm ^{out to the east} forming ^{partly} ^{limestone}
and one comes at base of a coarse quartzitic
sandstone with ^{occasional} ~~large~~ pebbles of quartz up to one inch and
lime-stone boulders up to 3-4 inches. These shaly
reddish sandstones are interbedded with thin red
shaly shales. The d.f. of these sandstones is about
 20° . There are occasional brick ^{thin} shale zones
with small and more rounded pebbles ^(= 2 inches), these range up to
inch in diameter. This layer has the appearance of
angular bedding a heavy sand with pebbles.

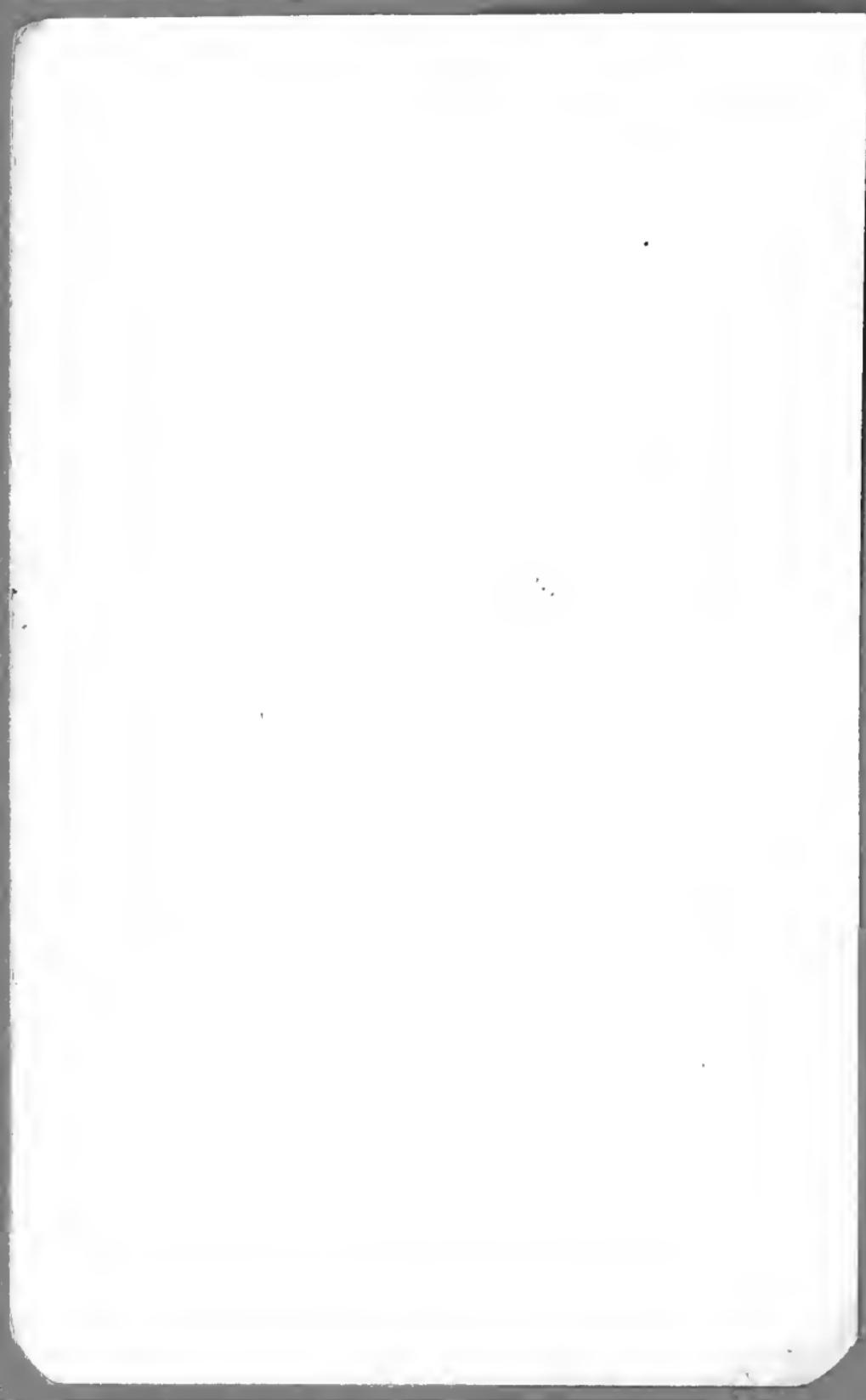


The green cretaceous with irregular streaks in one direction of a whitish color, along the grain of flow intercements. Then the thin green layers kidney like.

Between the brick red sandy shale zones there is a thick layer bedded coarse sandstone that has been described elsewhere as a glauconite. When the material shows decided cross bedding. ~~A few dunes type.~~ There are probably more sand and sandstone zones. As I go along it is seen that these are not dunes but irregular channel deposit. Thus,



Farther east there is an alternation of limestone with the brick red shales. At the junction of the shales with the sandstone may be seen small sun cracking of the concave type but in the cracks there is no sand worked in. The limestone ^(circular) buttons are now nearly all gone. Only coarse pinkish sandstone and the brick red shales.



At another place this



The irregular dips are

The small ^{calcareous} ~~calcareous~~ globules are mostly
in limestone conglomerate but also in ~~limestone~~ concu-
tions = inter.

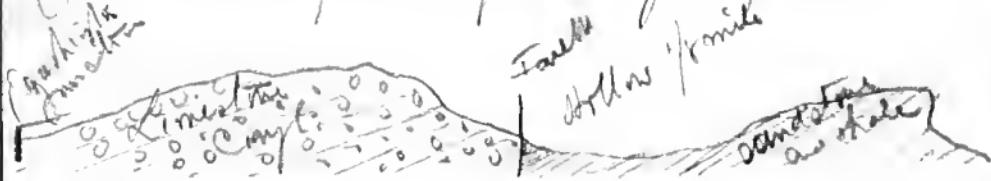
In places the beds are made up of rounded
handfuls clay stems by sandstone, like Bu-
thotefloras.

At the deepest horizon seen the Triassic
comes down over a mudstone, sand-
stone and of rarer blocks thinner and
upper, mixed with sand. There is also
here considerable stickiness, in vertical
faces up to 4 feet high.

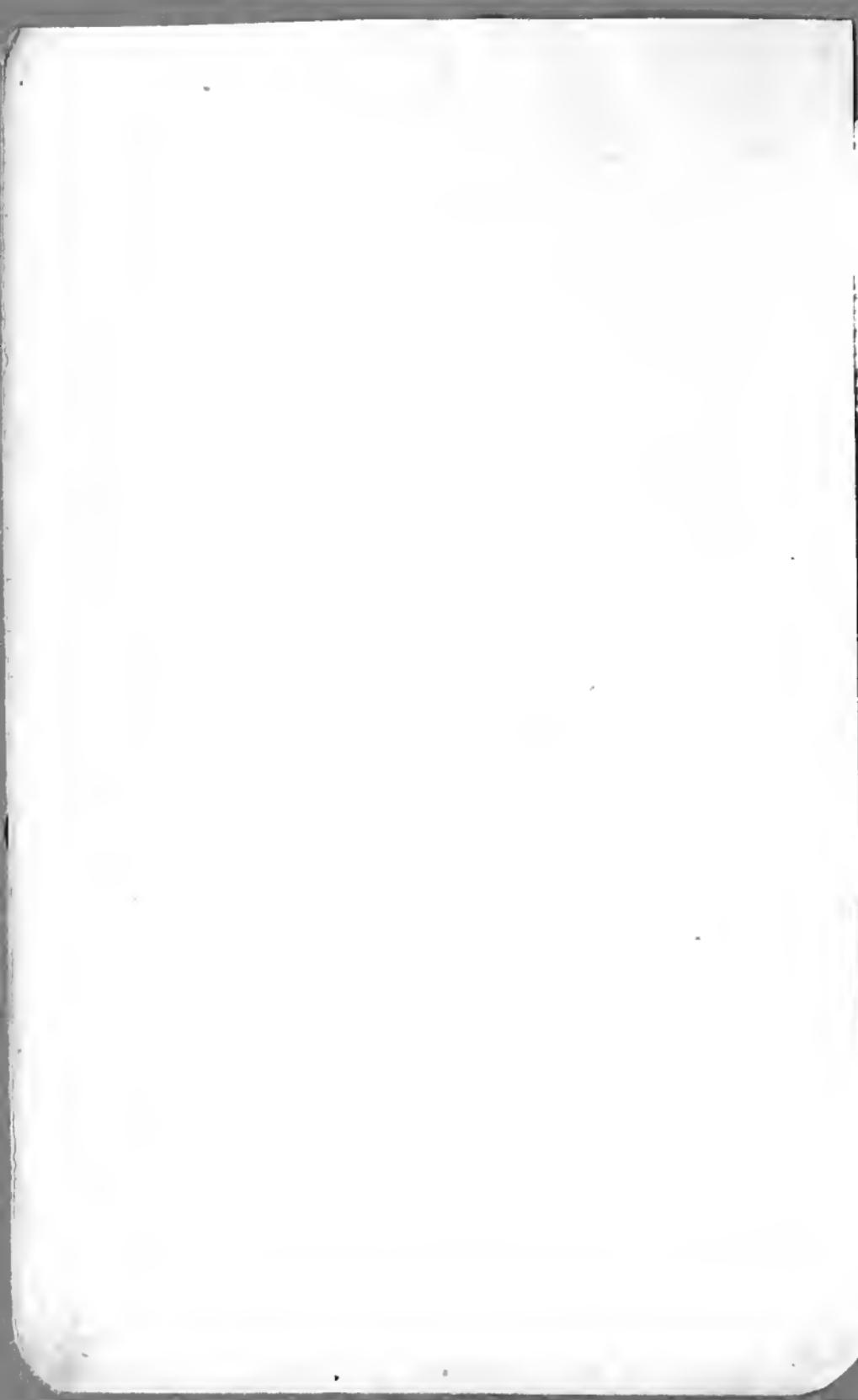
Returning the structure may be interpreted in
two ways. (1) one series of superficial beds are



(2) Two series of hills separated by a fault.



Left Hatchet junction at 4.47. Arrived at Washington 6.30 (stepping off Metiferdian).



(6)

The general structure is like this:

