From Murchison, De Berrieul
and Regnault
Géologie de la Russie à Oural et
Du Montagnes de E'oural.

Conus Crionetus - Fischer
Ostari, Dalmann, Kiesinger, Goldfuss, Remy, Moll
Eustasia von Buch, Klöden, J. Sowardy
Productus, id
Spinifera, Phillips, Palem
Trophonema, J. Hall.

Coquille inéquivalve, équilatéral
Transversée, Valve dorsale convexe, déprimée
cus bord cardinaux, ramenant génicule.
Valve ventrale plus ou moins concave,
complètement enfermée par
la valve dorsale, dont elle suit la cambre.
A per lisse, très saturegées, à bords sub-pars
elles, et formée ordinairement aux
dépens de l'une et de l'autre valve.
Bord supérieur de l'area de la valve
dorsale carrie de tubex minces, plus ou
M. de Buch et M. J. Fourney les ont considéré comme appartenant aux Septaria et Productus, dénominations qui pour eux sont synonymes. M. Phillips en a fait une autre espèce sous le nom de Quinina Papilionacea, et enfin M. J. Hall, en Amérique, les a confondues avec les Arthromon. Cette divergence de opinions entre les auteurs les plus célèbres sur le genre où l'on doit placer ces espèces, suffisait à le celer pour indiquer l'utilité d'introiturer une nouvelle, si la connaissance de leurs véritables caractères nous en démontrait la nécessité. Nous nous sommes entendus à cet égard avec notre savant ami M. de Kunink, pour lui designier sous le nom de Chouettes, nom que M. Fischer a proposé en 1857, pour une des espèces le plus répandue et qui, faute d'une bonne définition, est demeurée jusqu'à présent dans un complet oubli.

Les Chouettes sont des coquilles à valve ventrale concave, ordinairement petites,

...
il faut avouer que sa forme générale,
fortement gibbeuse, et ses valves enrollées
sur elles-mêmes, rappellent tout à fait
le post des véritables Productus. D'une
autre côté; les P. caperatus et Productoides,
ont tant de rapports avec les éléphanties
qu'on serait distrait à les y faire entrer,
s'ils n'étaient bourrés de tubes à la surface
des valves. Or, c'est à cet caractèreaque
nous sommes attachés pour poser la limite
entre les deux groupes, tout surprenant que
c'est, il n'en a même valeur à nos yeux, à
cause de son application générale à
tout le groupe Productus. Il n'en est pas
été de même si nous voulions prendre
de même les Productus et Productoides
pour la présence ou l'absence de l'Iva
area ; car bien que d'un général les Productus,
aussi ordinairement une charnière
linéaire et dépouillée d'area, conférant
Cette règle n'est pas sans exception, et
force nous est de l'admettre dans le
groupe Caperatus, les P. subaequantus et horresque,
nos lesquels contiennent inséparablement les P.
caperatus et Productoides.
Nous aurions encore pu choisir encore pour limiter entre les Choristes et les Productus, un caractère important, et qui serait d'une manière efficace à distinguer les deux genres, nous voulons parler du point d'attache des tubes cardinaux. En effet, campé dans les Productus ne sont presque jamais implantés sur l'encéle du bord cardinal; Même quand ils sont rapprochés le plus, ils sont faciles de voir qu'ils sont sur cette partie extérieure de la valve qui est une de stris, et qu'ils sont, en effet, avec celle-ci la plus intime relation. Ils n'offrent qu'une différence avec les tubes qui naissent sur la surface des valves, et leur plus grand nombre sur les valves est évident probablement de ce que les stris d'accroissement y sont aussi plus rapprochés. Chez les Choristes, au contraire, les tubes sont complètement indépendants des stris, puisqu'ils n'apparaissent pas sur la partie de la coquille, et ne forment jamais que une seule sère sur le bord cardinal. Leur position est également différente, car ils sont implantés sur la face même de l'area et répandus dans le plan des stris. Dans les deux, les deux espèces que nous avons déjà citées, B. carinatus et B. Productus, en sort souvent des tubes placés sur le bord de l'area, ce qui ne préférerait ce caractère pour séparer les deux genres, plutôt que celui tiré de la non existence de tubes ou d'espaces à la surface des valves, ces deux espèces devraient appartenir aux Choristes. Ce sont là, au reste, des espèces indiscises, par lesquelles chez les Brachiopodes à charruée articulée, la plus part des genres se lient ensemble près de leurs limites.

Si la surface interne des valves est chez les Choristes, comme chez les Septamna, bariée de petits aperçus arrondis, la surface externe, quand elle est défendue de la pellicule la plus superficielle du tissu, est au contraire criblée d'une nombre considérable de petits trous que l'on apprécierait facilement à la simple
...et qui sont rangés dans les sillons qui séparent les étroits longitudinaux. Les charnues n'étaient pourtant pas moins de bras sprunt susceptibles de passer à l'état foliaire, car on n'en a jamais décrit de trace, et leurs valeurs sont d'ailleurs, si rapprochées, qu'il y aurait en peu de place pour parceller d'organes. Le verre interne de la valve verticale laisse apercevoir la trace d'une très courte arête médiane, et de deux petites lames divergentes, très peu prononcées. M. de Koningh remarquera avec raison que les enfoncements en forme de cœur ou d'œuf, comme M. Fischer a observé sur le bord cardinal de la valve verticale de chaque côté du crochet, et sur l'existence desquels il s'est principalement appuyé pour son genre, sont loin d'être aussi prononcés que l'indique la figure qu'il a donnée. Ces dépressions sont dues aux deux petites dentes de la valve dorsale. Quant au mode d'abasour de ces coquilles, nous sommes portés à croire, comme M. de Koningh que c'est dans le jeune...
des assises inférieurs du calcaire de
moûtagne, sont en Angleterre, sont à Sobe
(France), où à Thugiau (Bavire). Les C.
Buchiana et Minuta sont de petites espèces
plutôt que strates ; leurs plis sont peu
nombreux et peu déchirés ; la première
appartient au système Carbonifère, et la seconde
au système Divonian. Le genre Chouet,
vient d'être découvert dans l'Amérique
du Nord, et les deux espèces qu'a figurees
M. Hall sous le nom de Strophomma
Cornuta et Stigirea, présentant les mêmes
caractères américains que en Europe.

Classification des Chouets
note - Ses espèces précédentes et une annexe, sont
les seules qu'on trouve en Russie.

1. Sarcomastix Schicki (Schicki)
2. Buchiana (Buchiana, de Kow)
3. Lepidocera (Kow) (Buchiana, de Kow)
4. Macra (Kow) (Buchiana, de Kow)
5. Minuta (Buchiana, de Kow)
6. Buchiana (Kow) (Buchiana, de Kow)
7. Minuta (Buchiana, de Kow)
8. Minuta (Buchiana, de Kow)
Analyse des caractères des Chitonides

A. Striatae

1. A. striata. Milieu de la charnière il y a environ quinze stries dans un espace de 5 millimètres. La longueur ne dépasse pas 25 à 30 millimètres. Il ne y a que très peu de cent dix stries au tout. La longueur de l'individu adulte dépasse toujours 10 millimètres; il n'y a jamais moins de cent stries au bord des valves.

2. Il y a environ quinze-vingts stries au bord des valves, et elle a dix-huit dans un espace de 5 millimètres. L'œil ventral est très allongé.

B. saccinata

1. Il y a cent vingt stries au bord des valves, et vingt-deux à vingt-quinze dans un espace de 5 millimètres. L'œil ventral est molle ou réfractaire.

B. Dalmaniana

1. La largeur atteint pas 10 millimètres. Il y a moins de cinquante stries au bord des valves.

A. Coquille plate

B. Lenticula

B. Porca

1. Milieu de la charnière, il n'y a que sept stries dans un espace de 5 millimètres.

A. Se coquille est presque deux fois de la longueur. Le nombre des stries est de 75 en moyenne de quarante elles sont traversées par des stries microscopiques. L'œil ventral est oblique par rapport à l'axe longitudinal de la coquille. Le, armata

B. S. La longueur est égale à environ 0,85 de la largeur. Le nombre moyen des stries est de trente-deux. L'œil ventral est fortement renversé en avant, est presque parallèle à l'axe longitudinal de la coquille, et se trouve à peu près dans le même plan que le oeil dorsal.

B. L. La longueur atteint jusqu'à 80 et 100 millimètres. Des stries étaient assez fines que dans les espèces précédentes. Ils y en a à cause de la grand largeur, jusqu'à deux cents cinquante et plus.

A. Coquille plate

B. Trigonia

B. Lenticula

B. Porca

1. Milieu de la charnière, il n'y a que neuf stries dans un espace de 5 millimètres.

A. Se coquille est presque deux fois
plus large que longue, et sa plus grande longueur est au bord cardinal.

Choneis sarcinulata (de Bouck 1843)

Coquille petite, transversale, à peu près demi-circulaire, peu gibbuse, et ayant sa plus grande largeur au bord cardinal. Valvula dorsale sans prolongement antérieur productiforme, convexe ou légèrement aplatie sur la ligne médiane. Area très étroite, subsaillante, et borne de chaque côté du crochet de cinq à six tubes qui s'insèrent sur ses bords supérieurs et trancheants. Ces tubes, régulièrement espacés et inclinés de dedans en dehors, sont courts, pointus, et leur extrémité, et sont en gypses - aux dépens de leur croissant jusqu'aux angles latéraux de la coquille. La fronde medi-
cane de l'area est cicatrisée au sommet, et ouverte près de la charnière pour recevoir la dent ou le détectum de la valve opposée. La valve ventrale est concave et ne laisse entre elle et la valve dorsale
qu'une étroite espace pour le logement de l'animal. La surface est couverte de
étroites longitudinales rayonnantes, digitales,
-ones, droities, espacées, et non piquées
Dans les coquilles adultes, on compte
soixante-dix ou quatre-vingts stries
qui, plus du crochet, sont réduites de
de flans de mortier, mais dont la largeur
est toujours la même.

A l'intérieur, la surface des valves est
garnie de petites granulations, plus
serrées vers les bords que dans le milieu.
Les stries extérieures ne se repèrent pas.
Grâce au relief la couche la plus
superficiale du test externe de la coquille
ou découvre des séries de petits points
enfoncés, rangés dans les sillons qui séparent
les stries. Ces points n'ont pas servi à l'injection de tubes extérieurs, puisqu'ils ne
se voient jamais qu'en dessous de la premi-
ère couche du test, mais ils correspondent
aux granulations décrites dans doute par
les poètes parois du manteau dont la
Rappels et différences.

Comme toutes les espèces destinées à vivre dans des régions différentes et lointaines, et à travers époques succédant et de longue durée, le C. sargiculata semble avoir été dû d'une grand aptitude à modifier sa forme primitive. Nous avons pris d'abord que la forme s'adapte comme caractéristique des dépôts sédimentaires, pouvant être distinguée de celles que l'on rencontre dans les conchs moins anciennes, mais après plus nombreuses examens, nous nous sommes convaincus qu'il s'agissait pas ainsi, et que le C. sargiculata passe à travers les trois systèmes sédimentaire, Devonien et Carbonifère. C'est aussi, d'autre part, l'opinion de M. De Buch. Les modifications principales de cette espèce portent : 1° sur la forme plus ou moins transverse ; 2° le tableau qui précède montre comment, sans ce rapport, les Ethis cordidés et Beaudinis se lient par des nuances insensibles à la sargiculata ; les échantillons que nous avons trouvés à Fairhead, en Irlande.

Trees, books in the running brooks; stones in stones, and gold in every thing.

October.

October 27, 1866.
Journal of Tour to Nebraska

May 9th,

Left Albany at 10 O'clock A.M. arrived at Buffalo at 9 O'clock P.M. took passage immediately on 2/13. Engine State for Cleveland. Splendid boat, 1240 horse power engine under 72 inch boiler diameter. Arrived May 16th at 10 O'clock A.M. at Cleveland also started immediately by R.R. for Cincinnati. Arrived there at 10 O'clock R.R. P.M. took lodgings at the Cincinnati House. See great contrast between the forwarding of vegetation along the Ohio and in the region of the northern lakes.
Lowest rocks seen here, and as high as one hundred feet above the bed of Hudson River—Mica Slate and Hud. Riv. group. The former is now considered rather as a subordinate member of the Hud. gr. than as a distinct rock. The whole consisting of black carbonaceous slates and shales and shaly sandstones with beds of impure limestones. The various beds much twisted and disturbed, joints and fractures rubbed and polished by motion amongst themselves. No evidence of high degree of heat. Slaty layers contain iron pyrites decomposed on exposure to the air, imparting a rusty appearance to weathered surfaces. Local dips in almost every direction—General dip S. W. The only fossils seen here were Graptolitus micronatus, G. bicomi, G. ramosus, G. sagittarius, G. tenuis, G. spithamius, G. furcatus, G. gracilis, G. pustulatus.
and some 4 or five undescribed species of *Graptolites*, also a few imperfect specimens of *Helminthosporites*, all of which were found in black slate near the mouth of Norwalk hill one and half miles below Albany, at with place the slates stand nearly vertical.

*Note* Prof. Hall thinks *Graptolites*, *Dinornis* and *G. scalaris*, of his first vol. Pal. N.Y. identical. Also *G. pristis* and *Mamoratus* identical.

Immediately above the above-named rocks there comes a deposit of sand, gravel, and boulders which from its irregular stratification appears to have been deposited during the action of violent current or waves. The gravel and boulders are regularly smoothed and rounded, and sometimes firmly cemented together by calcareous and ferruginous matter so as to form

compact conglomerate. Mostly granitic and metamorphic, many of the latter from Poesten sandstone and sand-granite from presence of hornblende and augite. This Drift deposit rests unconformably upon the Hudson river rock, and is wanting at many places.

Succeeding this Drift there comes a more modern estuary deposit, consisting of bluish tough clay, about 80 to 100 feet in thickness, lower part in thick beds, upper part regularly stratified, and thinly laminated. Calcareous concretions- at times whose weather is drab color. On surface of thin laminar treads of worms. According to Dr. Wight, remains of leaves and stems of a plant similar to *Mittel-laepus* have been found in upper part. Remains of fish, it is said, have been found in an equivalent in Canada.
As the subjacent drift deposit is often wanting, these clays are not infrequently seen resting unconformably upon the Und. Riv. rocks.

Soil throughout the district immediately underlain by the clay exceedingly clumps can only be cultivated successfully when well drained. Growth chiefly White Pine, (Pinus strobus) and Pitch Pine (P. rigida) together with a few Willows.

Excursion to Colesberg. Some 2 or 3 M. S.W. of Albany, surface of country entirely sand, which overlays the clay deposit previously mentioned. This sand deposit varies in thickness from a few feet to 30 or 40 feet, and where it is most covered with vegetation is often blown by the winds into heaps or Dunes 30 or 40 feet above the common level of the country. It is now probable that some of the higher elevations now covered with vegetation and generally considered the effect of other denuding causes, were thus formed. Some of the slopes covered by this drifted sand, regularly and beautifully ripple marked.

The entire surface of the country must have been elevated some two hundred and fifty feet since the deposition of this sand and the subjacent clays, both of which are supposed to have been deposited in an Estuary. Sand in the sand districts, of inferior quality for farming purposes.

As a distance of some eight miles S.W. of Albany, came to an extensive deposit of sand gravel and boulders. Probably a continuation of the same beds seen under the clay at Albany. As the country is here elevated some 150 to 500 feet above tide the probability is that the drift at this place was above
the level of the sea or estuary at the
time the sand and clay were deposited.

A short distance beyond this
we ascended a hill which we were
informed by Prof. Hall is an outcrop
of Trutaculite and Sower Pentamers
Sinterstones with about 10 feet of
the onondaga Salt group which rest
directly upon the Hudson River rocks.
The Medina Sandstone, Oneida Con-
glomerate, Clinton and Niagara groups
wanting at this place. Surface
strewed with boulders mostly
metamorphic rocks; a large proportion
altered Potsdame Sandstone. Many
granites. Saw some of Lepidolite, Sulfanite,
and Hornblende rock.

Crossing this outcrop we descended
into a valley which Prof. Hall considers
an ancient bed of Mohawk river which
once passed into the Hudson along the
base of the Helderburg mountain.

Some eight or 10 miles S. of Albany
Here on S. W. side of the valley, and
commencing at the foot of the hill we
had a fine exposure of the three
lower members of the Sower Helderburg
Series viz. Trutaculite Limestone
Sower Pentamer, and Dilthyris
Shaly Sinterstones.

In Trutaculite Limestone we saw
immense numbers of Trutaculite, crat
a few imperfect Specimens bytherina
probably C. alta, and a gasteropod
like Siterina antiqua, Compak
bluish or grayish Sinterstone in thin layers
altogether about 25 feet thick.

Above this - Sower Pentamer
Sinterstone in thicker beds, dark bluish
not very regularly laminated. Saw in
it Atyspra reticulata, Pentamers
galea, Spinifer omogus, Some two or
three new Sh. Atyspra, one Siptana
and one Sprophodonta together with
Some corals belonging to the genera Favosites and Sphenelites &c.

Thickening of this rock about 50 feet.

Ascending the hill a little further we came to the Delthyris Shaly Limestone. Lower part Shale
and limestones, the latter in thin beds;
upper part grayish compact limestone
containing amongst other fossils, great
number of the cup or valves of a large
crinoid. Aricula, Spiifer, Macroplana
Atyphite singularis is found in shaly
lids towards upper part. Spiifer megos
atyphite medialis, articulasi, Parat-
cretatites Delthyris varica. Together
with a vast number of other beautiful
and interesting fossils in middle and
lower part. Entire rock highly fossiliferous.

Middle portion forms a yellowish
soil by decomposition.

Thickening about 100 feet.

Country rough and hilly or

Some mountains. Highest part of

With shaly limestone at this place
about 500 feet above tide

Growth. White and Pitch Pine, Hemlock
Cedar, oak, Sugar maple; Hickory de

Forest trees smaller than in Western

States

[Diagram: A few mile-back from Dr. Sand

Modern situation

deposit

Yellow clay strata

Dominated

Pristine clay in strick

beds

Drift

sand gravel and boulders

inperfectly stratified

Black slate, slate sandstone,

and shaly limestone

Sing the Utica Slate, Hudson

group folded and crumpled together - dip

in every direction. Graphites, orbicula

The above is a section of the hill

on Hudson River near Albany, N.Y.
Journal of Expedition to Nebraska

Saturday, May 9th
Left Albany, New York, steamboat at 10 o’clock A.M. Arrived at Buffalo at 1 o’clock P.M. same day. Took passage immediately for Cleveland on board the fine steamer Engine State. One of the largest and finest steamers I ever saw. Engine 12 00 horse power. Cylinders seventy and inches diameter. Number of revolutions of engine as shown by indicator 1700. Some wind but Lake very smooth, calm. Had good night. Arrived at Cleveland May 10th.

At 10 o’clock A.M. took passage on board the B.P. for Cincinnati. Arrived there at 10 o’clock P.M. Took lodgings at the Washington House.

May 11th

When I left Albany, day before yesterday, trees just beginning to show some signs.
of passing here along the Ohio, it
appears to be nearly in full foliage. Saw my
friend Mr. Battile Henley, took passage
on S.P. Springton for Louisville and left
the wharf at 12 M. Arrived at Louisville
at 12 P.M. the following night. Took
breakfast at Louisville Hotel. Saw my
friend Dr. Hume, went down in
boat to Portland and took passage on
S.P. Lucy Robinson for St. Louis where
I arrived at 12 O’C.M. on

Saturday 14th May

An old gentleman from near Scott Co.
Ry. by the name of Buchanan Horrison
robbed (630) six hundred and thirty dollars
as we came up. the Mississippi river and
who came on board at Cairo but took passage
for St. Louis but left at some small
town during the night.

On arriving at St. Louis found
Dr. Evans U.S. Signal of st. of survey of
Oregon here, and learned that it is

his intention to visit the Missourians' town
and make a collection of fossils which he
is to send back by Dr. Shumard who will
return soon. Upon learning these facts
fell some and that Dr. E. and Maj.
Stephens were very much offended at
Prof. Hall for sending us. I was somewhat
perplexed as to the propriety of continuing
the expedition under the circumstances.

Consulted Dr. Hume and Prof. Hume
Was advised by them to abandon the

the conditions that Mr. Hume and Hume
should receive appointments as assistant
in C. E. F. Maj. Stephens' corps (Dr. E.

who offered to procure my service and
has telegraphed me on the subject before
I left Albion and that they Dr. E. and
Maj. S. should pay back to Prof. Hall
the and, he had already applied in fitting
out the expedition. Dr. E. and Maj. S. had
a consultation and returned the answer
that they declined the proposition as
To time that the value of my services in New York for one year. Prof. Hepzibah also agreed to come on April 22d and
his way on to Cambridge next week. The whole matter to be taken further.
He had been most kind in consequence of his subsequent determination to go to
Saturday, May 31st.
After a great deal of trouble and
also we at last were ready to attack and
to start the work. Our plans were not
perfectly complete enough then and preparing
for the trip by setting aside way. B. would
stay a week or 8 or 10 days and first go
all length, nor was I ever regarded as a
good reason by Hepzibah for the two years. The
North would have been able to get through
out Cape Cod and not start till we were
finally off. Dr. Walsworth, who had been
Hepzibah removed from Cambridge
more important to him (Hepzibah) to
have the whole matter conclusively
settled and his money paid back.
Sunday, May 19

Short sails above 2 h. Somewhat clear, motion of the upper
M. towards the left side, and the motion of N. towards the right. River high,
Mother M. pleasant, minds glad.

Waters are high. Stopped to rest a short time after dark. Mr. Heyden
and myself rowed on shore and collected
by moonlight some berries or other objects.

1855

Wednesday, May 22

Waves come along night shore. There is always a slight wave along night shore, except when there is wind from
the opposite side.

Cliffs and boulders along night shore.

Large waves along night shore, end

Stopped to rest a short while.
Monday May 21


I left the boat and went ashore to make camp. I made camp on high ground near the river. I made camp near the river. I made camp near the river.

Collyomine and Drayton 300 feet.

At 6 o'clock PM passed the mouth of the puter River and came in and the river was here. I made camp near the river. I made camp near the river. I made camp near the river.

Collyomine and Drayton 300 feet. The boat stopped at the mouth of the river and came in and the river was here. I made camp near the river. I made camp near the river.

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Collyomine and Drayton 300 feet. The boat stopped at the mouth of the river and came in and the river was here. I made camp near the river. I made camp near the river.
Coal as far as we could observe appeared of inferior quality in consequence of the presence of sulphur of iron.

First At J. D. Donelson measured the

Above 785 feet in size. Some of the

gentlemen connected with the corp. of

Criminal department caught a young

Basket strauks near a large O

bull frog.

Wednesday 25th May

Passed through many water at 47.00 - Arr

on 

major (50 feet) which looks like

chase. Will be and broken near town which

is on left bank. Distance from 81 site

252 m. Remainable bend in river

here causing a great ebb

and the dam is easily crossed from Pope

Ponding. At 21.00 I felt

the month of yard River which comes in on the Seft. A new little village a short

distance below. Village pretty on a moun-

tence about 100 ft high north granite

Botanical specimens. The strata

above have yellowish appearance

from London Oxford

contain a fine and a fine

togethers with several coal

strata below and above. Just

below the landing a huge bluff of

limestone rises from the water edge

to the height of about 300 feet.

Then is crossed with about 300 to 20

feet of gentle slope. Strata in this

bluff afford nearly horizontal. But within

on which distance 3 a grade of this stone

as on a piece of coal said to be

find in thick part which together with

the innumerable strata dips at an

angle of about 15° to 20°, and

smooth slope of the hill. The strata of limestone

are seen slightly tilted. The

Annexed limestone contains strata sometimes

together with products, calcifica and

other coal beds carbonaceous.
1853

Slip to the river. The land of the country here is indeed all the way down to Bloomville, appears to be elevated more than about 100 feet above the river, and the bluffs appear to be generally 1 or 2 miles a peak and are rarely seen from the river. The river is very wide and full of low sandbars which are usually covered with Poplars (Populus monilifera) willows & characteristic flowers (Pneuma ciliatum and Sigonum lophotes). Rich bottom benches, just below mouth of grand river, many sand bars and numerous snags.

Passed Miami a village on an eminence on right shore at 9 a.m. before 6 A.M. saw some cherty beds, limestone near edge of the water just above town. A short distance above village I was standing on forecastle looking down at some 25 or 30 of the companies hired men Vaughn when a pile of flowers bombs and

other goods, when I was startled by the cry of fire, instantaneously the men commenced taming down the pile of goods, bombs and throwing water down between the bands from whence the smoke ascended, and soon extinguished the fire. It had originated from fire dropped by some of the men from their pipes. It was not until after the fire was extinguished that I remembered that there were 100 or 150 lbs. of powder stored away in the hole immediately below the spot where the fire originated.

Distance from St. Louis 504 miles

Thursday May 26th 1853

Country still continues to be low, 5 or 10 miles below Jefferson passed a bluff on right side about 60 feet high 30 or forty feet of sandstone near the flat north which Shale rock beneath it. At 11 A.M. Captain Jefferson Ms. Town principally situated on an elevation 100 to 150 feet on right bank. Bed of coal about
safety just above river 20 inches thick worked to some extent and sold to steam boats. Saw no rock in place of safety the sand stone and shale near coaly collected some fine specimens of Ordixia in a dark bituminous shale amongst the boulders of mine. Also a singular triangular superior plate of a stone and amongst the decomposing shale an atypia similar to A. Concentrica of Hamilton group no. 11. System. Otherwise in a fragment of a buff colored magnesium limestone a choritus similar to C. vanilatia if not identical with that species. Also saw Productus seminmetallosus.

Friday May 24
Parad Independent above landing this morning at 8:00 A.M. Bluff or hill at landing 100 to 150 feet high. Rock offered near water edge and at an elevation of go or 50 feet above river. Apparently limestone. No part of the country here and for a long distance below (in sight of the river) much more than about 150 feet above the river. Bottom and islands low (10 to 15 feet) with heavy forest of Poplar. Sierrae, short Anemone & Sanguinaria still characteristic. Saw a富力ator in the Julianaum yesterday for first time on Missouri. Current of River very rapid (6.5.8. m.p.h.) At 10. 80 A.M. stopped to take wood at Silvertown on left bank. Hill here about 150 feet high. Base shows up some of drab colored shaley mud rock with scale of mica between laminae. 21 or 22 below a heavy bed of limestone with Productus seminmetallosus, Small bilobate Productus and a smooth atypia like A. Concentrica saw here for first time the beautiful Tribena ambigia. Passed Mount Kansas River at 3.30 P.M. village called Kansas on forks of two streams (4.40."

* Nebraska on left.

1853

1853
Passed Fort Schermake at 10 A.M. Situated on a high bluff about 150 feet above river with beautiful slope in front. Low body of chalky limestone seen along near the river's edge saw no folds in. Only had a few minutes to look.

At 2:30 passed a Kickapoo village situated on a bluff on right side about 200 feet above river. The first signs we have yet seen of Indians. On river bank opposite the village saw four or five Indian men and two or three妇女 about eight feet. Caught the first glimpse of a high rolling prairie beyond the forest trees along the river bank to the N.W.

Sunday May 29th

Morning cloudy had fine rain last night. Road laid by last night on right side. Met on shore with J. Alsum to examine plants. Saw Syphilanthus and Peurifolium. Wild strawberry.
1833

19

with help vine. Some Poplars, Elms, and other trees often covered with Poison Ivy... and Poison Ivy.

Hills along on right shore with beautiful gray slaty rocks covered with scraggly plants. Some patches of yellow's, which may indicate copper, sometimes seen. Notably carboniferous. Hills about 150 ft high, wide alluvial bottoms, an opposite side, clotted with heavy growth of Poplar, Elm, and Oak. The banks covered with evergreen trees. Many slugs and sand bars curiously rapid.

Arrived at St. Josephs at 11 A.M. The most beautifully situated place I have seen on this river. The town is partly on a rich sandy bottom and partly on the slope of hills of drift (clay sand) which rise behind the town to the height of about one hundred feet. Just above the town, there has been a slide, affording a fine section of hill, did not have time to examine it but it looked like clay sand. Hills back of town have smoothly rounded outlines and are mostly destitute of trees. Bottoms along below the town rapidly caving away— all the lower part of the town will doubtly soon fall.
mourn fragments that it might be called a breeze. Saw no fossils in it excepting a few crinoid discs.

Ascending the hill which was very steep and thickly overgrown with trees and various kinds of undergrowth bound together with green briar (smilax hispida) we found amongst the loose earth and fragments of rock at an elevation of from 100 to 250 feet variolata, Brocasia coenatas. P. Cora, Ostrich trimorpha. Almaja subtila and beautiful species of smooth spirifer also a small pelucid spirifer. Some of these fossils were entirely detached from the rocks and quite perfect.

At the head of the hill at another place where it is much higher and formed on the summit (as they suspected) at an elevation of 450 feet, some fine specimens of mytilus

Pteronoides, Atriculoides and other cephalopods mollusks, some of which resemble very much, forms found in the chumash and Hamilton groups of N. B. This locality is on the left shore and about 1/2 mile above St. Joseph. Stopped to take wood on some side 8 or 9 mile above and found in a hill a short distance back from the river some of the same fossils.

Monday May 30th

Country hilly, has a larger proportion of prairie land than we have yet seen. Hills generally about 200 to 300 feet in height with rounded outlines. Sometimes we saw places where the river has cut in close to the base of the hills showing low ledges of stratified rocks having the appearance of limestone with a heavy deposit of drift (color of yellowish color) above. At some places the limestone was seen at an elevation of about 100 feet.
State this afternoon passed some beautiful bottom prairie land on right shore with high bounded at a distance of 2 or 3 miles back by high smoothly bounded high hills, sprightly clothed with timber. Left shore generally low bottoms, with dense forest and tangled undergrowth — laid by for the night at one of these bottoms. Went on shore with lantern with intention of going back to bluff last found after going some distance only low bottoms. Only found one plant near to us J.B. an impatiens like plant but with opposite leaves.

Tuesday May 31st.

Morning clear and pleasant. Passed early this morning on right shore some bluff showing at base 30 or 40 feet high, jutting shelving rock with thin beds of hard rock apparently limestone, clip about 23° to 26°. A short distance above this and immediately below the mouth of the great Atchison saw some strata in a bluff about 100 feet in height dipping nearly in a horizontal position.

River falling, many sand or cotton sand bars, and many waterfalls and rapids. County seen to day beautiful, being every variety of prairie woodland. the valley of the Missouri appears to be generally about 6 to 10 miles in width and is bounded here by smoothly rounded hills from 150 to 300 feet in height, which is the common level of the country. In this great valley the river winds about now sweeping the base of the right hand bluff, then after a few curves cutting to way close beneath the left. The bottom land is generally elevated only about 10 to 12 feet above the present surface of the river, and a large portion of it must be inundated during very high floods.

These bottoms and islands are generally
covered with dense forests of bottom-wood, sycamore, elm, &c. Both may
passed yesterday and today are beautiful
carried as level as a house floor.
Many of the hills and the high
country as far as it can be seen are
also prairie land, though there is
always in the valleys and the vicinity of the river... an abundance
of timber. The bottom-land is
very rich—the soil of black vegetable
would bear often as much as 50
bushel in depth. The great objection
to these bottom-lands for farming purposes
are their liability to overflow, and
the constant floods of the river.
There are low banks or points like
in the Ohio bottom.
Called today at 11.30 A.M. the line
between the States of Missouri and
Iowa consequently, the land on
our right going up is down and
that on our left Nebraska, Sac
and Indians of Sac and Fox tribes
along the shore. They arm themselves by throwing them crackers
when the boat stopped near shore—
they ran along... kept up
with the boat for several hours—I
noticed although there was always
an army3 in the buurt. After the boat
when it had thrown us to them, it was
always demanded by the oldest man
in the party; by the successful hunter
I presume he was to divide it among
them.
No pen or pencils can do justice
to the beauty of the country passed today.
Here some chance to examine the
geology of the country, but they have
a stop where they can see wood which
is almost always on the low bottom
soon after stopping they (re) take
in all the wood they can (the men had
abandoned the wood yard) and set the
mills to cutting wood by torch light,
but soon had to make their stop as
they had cut themselves badly.

Thursday June 21

Country site continues similar to one
yesterday I have before, sometimes we took
exposure of ochre beneath the drift and near
the water edge, which look like concretions,
directional towards evening. It often falls
then on left side of two other drifts
or hills which are raised by the rains
into angular conical and conical form.
Arrived at Bernard's House at 10 a little
before noon. Took the boat at
starting point to Lealifornia and

of drift below house. Stopped at the
Trading house on right, for the night.
Now many Indians of Amechuras
came and painted and stopped out.
Not a fine looking man on the right
launched a barge. I have been for the
first time on the Mecoraic River;
celebrations were very loud of Metangals
D. Known as the festival
Alme celebrmz a. Quite a number of
men we have not before seen in this
country. The artificial site

Friday June 30

Parked up. On our boat and riding to the
line of rocks more to the
left this morning at 8. It would take for all
Companie. Baffling. Five men made plans
It. We all stopped to work our
boat. Both men with their own hands with
some. One spread out. Comma. Some
spread. Some of large species of hares
would be working around in

...
about 11 o'clock in the morning stopped at a place where the dry grass
was watered with a mixture of salt and grue. We stopped on a low
bank near the head of the river and rested while the boys went
away for another barrel, and were far enough from the river
stream to be safe from the encroachment of California's.

About 12 o'clock we came to the mouth of the river and
were on the lookout for the first village on the coast.
about 15 miles in day. Could look back and see from our belonging place some high hills that stood this morning just across - Wide Bottom Prairie with a fine view of bluffs at the distance of some 4 or 5 miles. Saw deer and on Prairie - Collected dinner of flesh and a piece of prairie grass. Annoyed by mosquitoes on the boat tonight for the first time.

Passed the mouth of Little Sandy that evening at about 1/2 an hour before dark. Valley very wide all along. Our travels today on Right (west) made Prairie Bottoms with wild and green of bluffs. Wide bottoms on left with dense growth of trees. River very wide cannot very safely. Stopped about 1/2 of the day cottonwood trees and cottonwood branches and long limbs on bank. They chop the wood the proper length while the boat in upper may which helped them carry being nearly all the time (during the day) daylight for the night on night hand line with scattering cottonwood.
light, found nothing new - saw the bunting flags of some returned apparently abandoned of the size of the Badger quite abundant.

Tuesday, June 2

started at three and a half hours above Blackindy Hills came to a bluff of sandstone 40 feet yet in level demarcated by also heavy deposit of drift or marl - just after right sandstone leaving bedded with alternation of brownish bands, yellow limestone, upper very soft bed without penetrates many feet not only quite over of cliff to compose into accumulation of the appearance as an alluvial, these three that, produce chemically probably the Mississippian" Blackindy Hills being the highest point by the name of Blackindy as being by the remaining one of these hills. Which will be benefitting by addition.
after ascending the bank found a couple thicker of small willows. Also we soon own with wide hop vine. Saw great quantities of thistle (cosmopolitan) also a few of vour and friends the flower one or two in flower.

Midnight. Dec 6th

Morning cloudy and sprinkling rain. Head started over to Bluff Landing at 9.00. At the morning, find on the opposite side of the river become the Bluff (established) would get on a piece of stopped on other side. By 10 o'clock on board here, saw a number of half bred children and women about the landing. Although comparatively rare, they must of them are good looking. One woman told me of their all of South nation. One man told me of their way up to trade with the Blackfoot.
that he had been following this season and that we would see his farm as we passed up. Major told him through interpreter that if he would stay at home and make that he might well assured he should receive his share of presents from government.

March 1853 — From the above statement that some of the first men who passed through the region had to anchor near the shore on account of the discovery of large numbers of seals on the same. These seals are a great distance above on some rocks, ledge, and bluffs. School was out both days.

March 9th — We left the shore, at about 8 a.m. Magnificent bay. After windlass forced our boat an hour and had to hove off, leaving our German Prince and some five or six others on shore while they had to wait an hour or so before the wind could be just right for their many middle-aged to sea.
this morning at Sergeant Bluff

that a white man had started
from that place with an eighty
boat, and that in as
much as the great father was op-
posed to such proceeding, he wished
them to catch the Sippey Trcka-
take everything from him and bring
him in to the boat at the mouth of
Bismarck river tomorrow. The
smaller one who did all the
talking replied as follows-

"I am probably I was a dog
but when I hear the voice of my
father I obey - it shall be done.

He also stated that he was aware
that all the country on the other
side of the Bismarck belonged to
the whites and that they only lived
there by sufferance. He said that
an agent such amongst them
some time back, by the greatfather

them fighting the mosquitoes.

About dark two Indians came
on the bank and said they wanted
to shake hands with their father,
meaning Mr. Vaughan the alk.
Mr. Campbell, a half breed
interpreter went on and invited
them on board. After giving them
something to eat they were taken
back of the Sadies cabin and intro-
duced to Mr. Vaughan. One of
them made a short speech the
substance of which was that they
had heard that the great father had
sent them some presents and that
they would get them now. Maj
V. declined through the interpreter
that if they would meet the boat
 tomarrow at the mouth of Bismarck river he would distribute
some presents to them. He also
told them he had been informed

them fighting the mosquitoes.

About dark two Indians came
on the bank and said they wanted

was killed by a white man consequently they had nothing to do with it. After some little more conversation they left.

One of the men found the skull and antlers of an elk (a morning Thursday, June 9th)

started at 3 o'clock P.M. on our western side of the river, towards about 8 miles above. Diggins Bluff came to a very narrow place in the river with a very rocky bluff on right about 15 to 200 feet in length, 30 to 40 feet in height, a thick, woolly looking rock, regularly and thinly stratified, stratum horizontal. Above this a similar, but apparently softer bed and so distinctly stratified, having a yellowish color, about 20 feet thick, surrounded by nearly a hundred feet of peat or clay still inundated and sloping to brown up hills covered with gravel. Current very smooth.

In attempting to turn a point on the opposite side the boat was thrown back and across by the current five different times. I came very near striking against some large masses of rock near the base of the cliff.

At four o'clock had a fine view of Diggins Bluff and Bluff 2 miles north of it is as level as a house floor and extends from Big Spring to the Diggins Bluff 2 miles and a half miles wide, bounded by a range of bluffs which scarcely appear to rise above the horizon. In the middle has a landing post here. Mr. Dublett once traveled from here to St. Louis by land in the middle of December. Time 24 days. View of Diggins Bluff on Left shore River very high even, wide, and at some place running on banks. Sheriff's house right on right shore. Bottom sandy Many Badger Runners, many of which have been burned.
1854

February 21st

Last week I received a letter from my dear mothers, dated 18th inst. They gave me some information about my future plans. I am happy to hear from them and to know that they are well. I have been thinking about my future and have decided to go to the West Indies to work on a sugar plantation. It sounds like a great opportunity.

1857

[Writing is not legible]
always be poor under such circumstances. The again told them, that the great father did not want them to allow the whiskey traders to come into their country, and that if in such cases they moved to take from their horses, muzzles, &c, the great father would be glad. Is this they all responded how, how! But there is no doubt but they would rather encourage the liquor traders than other wise. They said they had heard nothing of the traders that left saugua bluffs a few days back. The bell rang and we soon started. A short drive below the dam came when the boat turned a point against a strong current with a full head of steam the bow over under water. The men much frightened one old fellow pulled out his pop and commenced praying.

At 1 o'clock, landed on a low bottom to take in wood bluffs about 7y of a mile through a low bottom with scattering cotton wood (Cupressus microphylla) turns back to hills and ascends to summit, country back as far as could be seen rolling, sometimes rising in conical hills with smoothly rounded cultures and gentle slopes, through some very quite steep, great numbers of beautiful flowers. Astragalus, lupines, and some other beautiful flowering plants with bright purple flowers, also snow pistoria blue with a species of Astragalus different from the A. campylocarpa previously collected &c.

The wood not being good the captain concluded to not take much, and ring the bell when we were on the top of the bluffs in the midst of our botanical collecting. Had quite a race to the boat through tall trees and undergrowth as high as our heads all of which must tangled up with wiki boots and other
I have removed the book from the shelf and have completed the first page of my entry. Having read the book, I now proceed to finalize this entry, as I have done before.

As I walked down the hill, I noticed the trees and bushes along the path. The sky was clear, and the sun was shining brightly. I could see the blue sky and the white clouds above.

I reached the hilltop, and I could see the mountains in the distance. The view was breathtaking. I sat down on a rock to take it all in.

After spending some time enjoying the view, I decided to start the descent. The path was steep and rugged, but I managed to make it down safely.

Once I reached the bottom, I looked back at the hillside. The view was stunning. The sun was setting, and the colors of the sky were beautiful. I felt a sense of accomplishment.

I continued my descent, enjoying the beauty of the landscape. The trees and bushes were swaying gently in the breeze. The sound of rustling leaves filled the air.

As I reached the bottom, I took a moment to appreciate the beauty of the surroundings. The sun was setting, and the colors of the sky were breathtaking. I felt a sense of satisfaction.

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This morning after some heavy winds which made way to S W was made. The swimmers in the river about a mile ahead. Lassoed a few minutes a dozen or more gave some resistance. As the current was not more than 5 yards from shore I had no doubt such a wind would make its escape, but it was soon discovered there was also a strong wind from the south that the boat could not move and we had to run two or three miles below Drowned Willet where there was to be an old trading post of the ferry company. Mr. C C. sends his to blow hard all day. Collected quite a number of canoe plants on the bottom stained and back of Bluff which were here about two miles from shore (N) among the plants the beautiful Pratetum...
1848

SUNDAY June 12th

The Chief and a party of his men sallied out to the eastward.

1753

It almost made two days

They had a long and social talk

The chief appeared to be quite an influential

After supper a table was set for them and

The guards near the party—

One of them (the chief toke

The whole contents of the table givin

The chief remained on the

all might now set out into talking

With the Indians there was no

Thursday Jun 16th

Started early and came in sight

Before we reach

A man in a military coat, with two

Soldiers came on board here.
Great numbers of Bactria Conqueste Morton 1#29 and his two and
coming almost one aggregation did not
see tree (presence of these persons which
were presently about 1st 15 miles
in the distance. Made up for almost
150 and so big as we probably
bulk made up of the same rock.
Our face to see between the pett rock
quick and hard.

Our mountainists who had walked
up to the measurement of the men who
were going up with strange my horses
that stayed with them that night—
left me here to go up to Fort Steele by
hand with the Canadian and
The native
One of the Bactrians described eight
sawd with a bucket of the rock
of Bactriana Conqueste, which grew
in great abundance here.

Our in a just about 12 and
When we had to destroy a headland which was completed too long it was
more convenient all day. We can
get a service boat in the bay
burning, having been killed a whilst
on a wolf seen. The walls towards
such a but did not return. We sent
a mile from where it was up
the same stop quite a stop from 3 or 4
little more in head to extinguish fires.
Perfect the chimney etc. ferry. Not
very closely but a constant and violent
wind. High winds frequent on the part
of carnivorous animals.

More or less 13th

Travelling about day light 8 West
The valley not more than 2 miles
in width. Mountains here, there at any
place we have passed for many hundred
miles below. They break in early
in night back 1000 of the river. Bluffs
of rock 60 or 80 feet at base of
hills. Strata horizontal.

About 1000 feet passed the mouth of
Rocky Bay. Opposite mountain comes in one
height above. Rocky bluffs have about
150 feet in height on both side of the
mountain with a much higher. rocky
mountain on a little quarter back. Bottom
in narrow with not much under trees. The
aflame smaller than ours comparatively
not more than two miles wide. Pretty
scenery about mouth Rocky. A number
of flakes dense over a low point of
land just above mouth Rockey. They
wanted the boat to send the trade with
them. The interpreter told them (the
rest own close by) to go on up with
the village 4 short distance above
where the boat would land. About
150 lodges. They are friendly with the
firm where camping they came.

Think to the inter in many with them and
very many as kind of trade a corn 100
The Chief was an old man with one eye and a much better left
For once there was no time for

We approached a large bristly bush with several white heads of flowers and a

We turned our backs on many of the others to the right and left of us.

Half a mile to the right was a narrow river running parallel to the

First I could not see the heads of flowers but I

A short distance from the chief was a group of men who appeared to be

A short distance from the chief there was a group of men who appeared to be

We turned our backs on many of the others to the right and left of us.

The heads of flowers were not far away and we could see many of the others to the

A short distance from the chief there was a group of men who appeared to be

We turned our backs on many of the others to the right and left of us.
excepting a few scattered clumps for which the men had to climb 80 or 90 feet up among the rocks. At last place which was about 60 miles above the mouth of a small coast. From in the bed and yellow sand along the lower bank of the beds of little streams which had fallen down from the upplains beds completing and filling the space of which appears to be sulphate lime and fibrous carbonate of lime in upper beds also horizontal seams of dense minerals between the strata. The highest part of hills which presented a pretty appearance.
In a short distance above the mouth of Blakemore, the current of the river was extremely strong, and the water was very dark. As we ascended, we observed many large and high bluffs on both sides of the river. Some were smooth and others were rocky. The bluffs were mostly composed of sandstone and shale.

As we continued upstream, we observed a large island, which we estimated to be about a mile across. This island was covered with dense forests of oaks and pines. The current was quite swift, and we had to paddle vigorously to make progress.

We passed by several smaller islands, each with its own unique scenery. Some were dotted with small, shallow lakes, while others were dry and barren. The water level was low, and we could see the bottom of the river in many places.

As we approached the mouth of the river, we noticed a large, rocky bluff on the right side. It appeared to be a good place to camp for the night. We anchored our boat and secured it to the shore. We then set up camp and began to prepare our dinner. We had brought enough provisions to last us a few days, and we were confident that we would be able to make it through the rest of the journey.

We spent the evening around the campfire, sharing stories and enjoying each other's company. As the night grew colder, we huddled close together to keep warm. We were grateful for the opportunity to explore this beautiful land and to have the chance to experience nature in all its glory.
This plate just this morning. Many
roses in flowers along river. Grey
shade. White Rose. Of Yellie's was their
advice. Two up in field.ی Extrajet
called them to come to the river of a
camp at little above where the boat was
quit alone. They moved there blankets
and found a little basin. There were four
at home the boat. One of them mounted
e small pony and started at half speed
for the hill of village where the boat
went to stop at third canoe memory
our host. Came up and shook hands
with host were very hearty and included
the remainder of food. In their blankets
on Buffalo others came to the party
have many goods greater value. Before
us there were 200 lodges distributed
at 8081. A jeep presented them with some native tobacco 1050
and "Hartley's" in use somewhere.
1893

Descent of a team with many sugar
extracting stations in sight. Probably
the Ojibwa are associated.

To reach the hill, we had to cross
over on the hill above where the hill
was notably elevated from the water.
There we scattered in exploration
around. We passed over the hillside
and down the hill and saw elevations of one
or two hundred feet. Here we made
of Carter, Hancon and species poly-
flora in flower. Together with many
other plants, we gathered some
flowers for flowered red and white
butterfly. We also passed over a
small stream of water. From here
we went down along a path nearly to the
foot where water.

The vacation in small streams of clear
source water, strongly mineralized.
1843

1853

Advised. They have been a long
looking for their own. Their offspring
was an expression of the desire
on the people to have a settled life and to be free
of the wandering and restless life of white men.

1843

... was an expression of the desire
... the wandering and restless life of white men.

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... the wandering and restless life of white men.

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Henceforth calmly with their request, he wished to pay them appreciation in such things as would be most acceptable and useful to them. When this was understood it was not long before he said that he wished them to come to him in July after they were done working their corn at the Reserve when he would pay them their annuity and have a big talk with them about the future annuities. Their leaders do not appear to be very satisfactory, and the Chief again drew and stated that they thought rather have their position of their annuities fixed; then more, that it may be very incommode for him to go to Pt. Reserve and probably not receive their half if it was due for them, and wanted to go to a place of any break and wouldn't mind having his place fixed as the Reserve to have their annuities fixed. He said he had given the practice for their chiefs to take away leading them a few things to lead them while they went to Fort Pierre, which they could do always of course wisely but their payment. He said the little with he usually had by the help on their way help aid them the year 101 and here to be divided annuities to many that there were only 2.50. He was sent here with a piece of the break and another of the other pieces which a boy in each was to his own and to the captains who was given his by making a strong desire to have them given how much they made them to their a land assistance of how kind were needed. The help to August would be impossible and them here, as the goods were sent a long way and would have been sent. On other states that he had 301 of their lands in his hands, and it would not do to specify presents to a portion of the land during the absence of their others as it often come in
discussion among the whites themselves. The
agreed to go to the Fort for remission of pay-
sent. They remained on board until 10 or 11 o'clock, conversing freely with all
who wished to talk with them through the interpreter.

Then the chief had given all his
medals to officers to his son. Who is a
noble face looking about 20 years

of age, has been on to Washington City
the previous sixteen years that stim-
ulation of the day is a boy. He seemed to
him as a lifelong desire of his entire
in being learned by the browns. He
is supported by the older, who looks to
child to learn, a serious and steady
I was surprised to learn from the information that
that he was employed in a very small
that he made himself a very good player
as a musician. He was one of the
Here he is the national chief. Besides
fell over them as a document be

has received from two general
work of midshipmen. Respecting how
as a chief. He had been given him at
a heavy dinner with them in 1814
and has been presented with just one
It was not even and her little sister
He is of capability mapped in a newspaper
of Spanish date, on the
Spanish map which I found the source of
his work, which he
in the house of an old Canadian and
where he has been in the country
eyed, more with that reached
the midshipmen.

I think it with the chief was
from her book as well as all the
words to the other Indians, which they
impressed upon them, and a looking
of the young men where they

which he had been
in their dwellings quite late.
Friday June 18th

We set out in the morning with Mr. Smith and two or three others to walk a circuit of the surrounding country. We found the road in good order and the weather fine. We arrived at the farm of Mr. Smith, who lives about 30 miles from the town. We spent the afternoon in walking about the farm, examining the surroundings, and conversing with the inhabitants. The farm is situated on a hill, with beautiful scenery all around. We found the country very picturesque and enjoyable.
1910

A good white little ocean canoe came in about 10 this morning. It is a 26 ft. canoe of 6 ft. beam. I could have easily reached it before night but it just been some difficulty in getting from this brook to have made my way through the woods for a violent thunder storm with much lightning rain and would have been glad to lay by our fold. There much disappointed.

Dec. 13 1910

A canoe now up to 9 ft. 6 in. many will agree that it is for convenience of a canoe of 9 ft. 6 in. beam was 10 ft. 6 in. having considerable the middle hood was taken out, and the fire was now on a stave up and right inside thought it was nearly night and we came here through the tangle up to the fast. It is warm and pretty was up and kept up with the canoe. The canoe had been concluded to wait for him. Very few canoe

1910

Although very cold the fog, the night was to rounds and the excitement be summed 10 Fast contrived not such. The

February 1st fogging with rounds among
are not well disposed towards the whites and refuse to receive their annuities. Only about 70 lodges remained here. At 9 O'Clock about 150 of the leading men of the Six Nations came on board by invitation to a feast. One leading man presented a fine Buffalo robe to Capt. Savery and made a short speech, wound up by telling him he looked upon him as the greatest man to the great Father.

They gave us an invitation to a great dry feast at their lodges at 3 pm also speech by Mr. Major Parson & 5 or 6 speeches were made upon the occasion did pronounce it very fine. I was too busy to go, but did not envy them their supper.

Monday June 20th

Spent the day in getting our things ready to start our. We are informed that the Indians are growing very jealous of the whites, and do not wish them to come into their country. Many of the

them think refuse to come in and receive their annuities. The half breed have made them believe the President wishes to get them to accept the goods and will then claim their country. The chief had a long conference with some of the more friendly of them at the Fork today. They all demonstrated against having the whites come into their country. They are all jealous of the Six Nations and think the chief gives them the goods or a large portion of them (that is the government) and that they make them (the Indians) pay for what legitimately belongs to them.

A great ball at the Fort tonight. Sat all squaws or half-breeds. Ended in a general roar at about 3 o'clock A.M.

Tuesday June 21st

Malvaisis Stews. All things being ready at 3 o'clock P.M. We set out with the intention of camping at
willow creek 8 miles from the fort. Indians told our men we will get into trouble are very much opposed to our going out—say they will kill our horses and rob or perhaps kill us. Dr. Swans party or at least his men with three carts (2 horses each) and a four horse wagon with two men on horseback started at same time.

The Dr. and Dr. Shumard together with Mr. Hendry will come on and join us in the morning. My party consists of myself Mr. Hapgood and three men. Their names are Henry Blackmore, Francis Randell and Isaac Darnsion a half brother who lives is as dark colored as an Indian has always lived with them. He takes his own waggon and his squaw with him. Also his own horse. Is said to be a fine guide and hunter and is well acquainted with the Indians and their habits. Both the other men are good interpreters, hunters and guides. Darnsion speaks French and Spanish very well but not a word of English.

After leaving the fort we traveled over a nearly level bottom prairie, scarce for about a mile when we came to the more elevated prairie country—assent very gradual until we reached the summit level of elevation of the country which is about 100 to 130 feet above the river. Our road continues nearly one mile over a rather hilly prairie country where there is not a solitary tree or shrub to be seen so far as the eye can reach in any direction. When we looked at the country at some distance off there seemed to be plenty of grass every where but, we found a great number of spots both on the hills and hill sides as well as in the little valleys.
There is not a single blade of grass
over any other kind of vegetation—
The soil or earth in these places
and all along the road is dark
coloured and this would surprise the
merely looking at it, if it were
productive. Along some of the
slopes another kind of
soil appears and various kinds
of dark grey clayey mould with
straw of an uncles or carbonate of lime
was seen. This black chintzitate
that these grass are left on the surface
and break into small angular pieces
which are often seen to thickly cover
the surface so as to almost hide the
soil. They become very hard and turn
quite black by exposure (perhaps
from presence of Manganese).

At a distance of about 1 mile
from the town we descended by walking about
around the little run and hoping gently
steep into the valley of Election Creek.

Which is only about 10 or 30 feet below
the common elevation of the country.
It had a small stream about 10 feet wide
and 2 feet deep & meant to the 3rd
the precipices the creek was over every
are often in the wood and in all afterwards
would need the care of these 600 feet. Lord's
would not be made materials much more
of a hard earth. Enough the time we got
out of it! Mr. Brown and some of Mr.
assisted to carry and get moor. The house finished
almost was fall down in the hand of water, and
is one of its finest stones it would form a
site near some rocks or stones and yet strong
and would still uphold the lands that could be
embarked in a little elevation, as soon as
we were fairly out of the water and banks of
the stream on a short portion and feared
over head on a look other. These mutter and
in a bad manner. At Mr. Brown's mill
they say immediately back to the foot near
the broken and with instructions to go a
At the end of about 25.50 I entered the place of the little creek, the following section went to sea.

About 20 feet of what appeared to the author as a piece of some material on the bed below.

15 feet dark greyish clay with a circle of hard conglomerate below. It contained more between the temperature and four pieces of concretions and three stones were all the concretions seen. The author was generally below a shadow on this occasion, a good deal of rain, etc., & the bed contained some shells and other fossils were composed of chalk or hard. Most of them were of a black, black calamine, & many were, though the black, which are more free from iron than the black, etc. There also seems to be a great deal of iron; the sandstone that lies black of iron.
a trace of a light yellowish col, about two in. thickening. It feels very much like common bar salt, in hardening and col. is rather a little more yellow. scramble in small angular pricks by exposure. These are also throughout the whole of the clay beds. thin\k beams and veins of calcite. they cut across the planes of stratification at Wavangles. These beds clay, disintegrate very rapidly so much so that they have to dig in some distance generally, to find it in place. Constantly crumbling. dolphinings many often contain with a white silicious salt. (Barite) Rocks all at the bed warded uposings appear to dip at an angle of 3 or 4 degrees to S. though this may be only local or it may be descriptive of the planes of stratification. Location on weather’s surface to imperfectly seem to be distinctly followed. The seams of hard and different col. stratigraphic affection to have the above dip, steeper up hill and a little distance back from this shelf with entire absence of vegetation in 1853, and of dark grajoh.
1853

Flowers. The whole country as far as the eye can reach is rather more Billy than what is usually termed a rolling prairie though the slopes are very gentle. Saw a few buildings (only 6) not over 2 feet in diameter next to gulps.

And several showers during the day; our course was a little S of W.

Whole country was marked by the knolls (just the old hill on the right hand side of Mr. McFalls). At about 4 we came to a small stream similar to that at which we camped last night. Built fort in the Little Conestoga above the ford.

I found an old half bred by the name of Poco and an Indian together with their squaws encamped here. They were just returning from a hunt on Black bird creek. They had caught 5 or 6 bears. Are purchased from them some fine woolen. They tell us there are about 800 lodges of them encamped near the bad lands also and they will not and are very white men who may come into the country.

He almost convinced the Indians such as are in invitation to a feast. On arriving at the lodge he found a time piece field with very nice firewood meat & some dry

prairie boiled together. The dish did not

look very clean but was at any rate but we

would have been after branch of sugar to have appeal

it very pleasant to eat if it was pronounced

in pace. The ladies were complimentary and setting

comfortable. The Indians and his squaw did not

but the latter former seemed very friendly and appeared

to be pleased to see us well.

Thursday 23rd

Started by canoe and came to Cave Creek 1/2 M. to headquar. Country similar to that seen yesterday. Arrived at Freeze creek at 9 o'clock. Some snow still again this morning. Nearly covered through but not lost much.
central or difficulty in getting over the mud
in Creek. Came on after diments a
small stream called Sepi Creek where
we arrived at 4 o’clock to camp for the
night. These early starts & stops give
the animals time to feed. Country travel
over to day not quite so hilly but still
rolling and undulating, no trees or
shrubbery of any size to be seen except
a few small cotton woods and willows
along small streams or rather shallow
valleys with viny gullies, in which
there are streams of water after rains
and at this time excepting in one or two
only pools of water. It is clear and
cool but does not feel very cool. Geologi-
cal characters of country similar to
that already seen between here & 3’ Pines.

Saw no broken fragments of Carbon
ian surface, but many of agglutina-
limestone on some of the ridges. Had
one or two showers of rain during
the day, and quite a shower soon
after we camped followed by sunshine.

Saw an antelope on the Prairie to
day but it was very wild and ran away
before the men could get within gun
shot of it. It was first seen and
pointed out to the hunters by Dr. Evans’
brother, an old Indian Medicine Man
who rides ahead in order to apprise us
of the presence of Indians. He is quite a dignified old fellow—
This name is in Sioux Esouni Munga (Lion horn)
Saw quite a number of plants in flower
along the road to day—the most conspicuous
was a Serramorina plant which grows
in spreading bunches, has palmate leaves &
bright purple flowers. It is abundant
in nearly all the way to 3rd Pines, covers
large patches of ground—there a
(Species of Asparagus) There is also another
species of some grain with white flower
1853

1853

S8 with some other slight dif-

Cortex not so abundant—same as before.

I have not seen Sit-tellmias Dominula

(small plant) anywhere on the

Prairie between here and Ft. Pierson.

It now so much wind to day.

Retired by several Prairie dog villages.

Friday, March 24th.

About 8 o'clock, all came on to

River Creek for breakfast. Morning cool and

clear &damp; fine. Arriving at breakfasting place

at 8 or 9 o'clock A.M. This a little stream we have

crossed many times but little or no foot prints.

Cows and horses only a very few small cattle

not near along the margin. We knew took my riding

staple to guide us to East of us to see if the cattle

had not come near the river an Adeloepr as on

new along same place as yesterday on the

River. Horse was quickly disengaged, and

with pistols armed continued the journey.

Chattanooga

and Arkansas

Lake A, Trinity, also a small medicinal

plant with yellow petals. One or two species

of Dracaena, common of this state, saw recently

in Boston markets. Geological fact

demonstrated existence similar to that found

eyesterday. I am noticing fossils, with a

chance of going to try west between

Cresses. Notice some interesting fossils. I have

noted several. Suggests of place to be deeply

expanded. Some low restaurants along with

clay above in which are seen fragments

of White Argilaceous inexistence. Also moss and

stones, Ag. Carb., brown & similar to stones in

clay. We pass over several ridges with clay

with fragment of some white Ag. zeigtmaren

may seen in distance. One of men killed

a prairie dog. Passed several Indian Villages.

They are very little, many to their houses;
enorm when with the ground nearly vertical in the

region of a small hill of earth. Their women

seem to

they always run into their houses when

seen.
1833

Cooked the positive day for breakfast, it was very fat and tasted only tolerably good, though the men and Indians think it very fine.

Country becomes gradually more elevated and less hilly. Horses did very well today.

At 3.0 O'clock this afternoon Indians joined us with two fine Antelopes he had killed since morning. At 5.0 O'clock arrived at Big Cottonwood Creek where we camped for the night. Had quite a feast of Antelope Meat. I am very fond of it, think it more saving and delicate food than deer meat. The men say they cannot stand so much fatigue when confined to it as when they have Buffalo meat. Randall took the tribe as soon as Indians deposited his load on the wagon, and ate it raw and without washing. Appears to think it a delicate meat.

About the time we were fixing to camp, old iron horn, 50's, toward guide starting, came in with two more Antelopes.

After supper we walked a short

Distance up the creek where it head cut in the side of a hill, exposing the following section.

No. 1. Soil Embankment

- 2. Dip composition of sand and angular and partly broken fragments white argillaceous coal. Lime, shell

acsions吵, iron, fibrous calcite and fragments having imperfect structure of bone in cone-form also in it several specimens of a bivalve shell similar to Bium or Lucina. Also, in the same condition a pelvic bone of some animal nearly as long as a horse.

No. 3. Plastic clay of greyish color.

Having clays or laminated structure very soft and crumbling.

No. 4. Sandstone concretion.

No. 5. Clay similar to No. 3, with homogeneous seams towards upright, 1 ft.

Iron horn, 50's and or caumen moduli of

1 ft. 2 in.
1858

97. Oolitic clay like No. 3. 3 ft.
98. Clay having imperfect
structure of cones in cone. 6 ft.
99. Clay similar to No. 8. 3 ft.
100. Argillaceous calc. iron. 2 ft.
101. Plastic clay like No. 3. 3 ft.

97 June 23 1/2

Tracts at same rise - sun very clear but
clouds broke. East mixed cool.

Pleasant. Sun after leaving the shallow
depression where we camped for the night,
came in sight of grindstone Buttes. Country
vegetation exactly similar to that passed
over yesterday. Breakfast at a small grove
within about 1/2 mile of grindstone Buttes.

Starts from present camping place last night. Only
a few small willow & cottonwoods along
stream. Saw Antelope on prairie. Surveys
trees 10 to 12 in diameter have been cut down here
by Indians with axes.

After breakfast rode to Grindstone Butte
which was nearly west of us. After riding
over prairie which is an undulating garden
about two miles, came to the base of the range of
hills, which rise not less than two hundred
feet above the common elevation of the coast. From breakfast place to the Butte
which we have been traveling. There is
also an exceedingly quite nice in the surface
from the small stream where we dined to
the base of those hills (about 100 feet in the
dist of 2 miles). Near the base of the hill we
came to large masses of coarse granite sandstone
lying loose upon the surface. It is very hard
and compact. Grains form size of fine granules
that surface or even change all regularly some
and - very finely, and appears to be cemented
by silicious matter. Coal of black on surface
granish with yellowish spots. Fractured
surface whitish, or sometimes tinged with
silicious matter. There are also often dark
or corn black grains in it which are sometimes
arranged so as to produce black stripes parallel
to planes of stratification. This, however, has
been in fresh fractured pieces - oblique
examination common. Some pebbles.
1882

Sometimes almost indeterminate in such in diameter & color, the peck of any large from few inches in diameter to 20 feet in width of the land in thickness, thinly scattered over the surface so that, the surface of it, would not distinguish satisfactorily whether there were many such or not, the surface being somewhat in places. In this appearance, we may see the Tua, immediately as 4 or 50 higher country, but at a depth of 75 or 80 feet, a great deal of boulders of clay and 2 ft thick which there is another peculiar force. The formation of the clay seems to be the common elevation of the country. If compared to 3.5 to 7.5 ft, the same occurs approximately similar to that we found, and we have been traveling. We saw a wall of boulders that lead lonely. Not a tree or shrub in sight excepting a few scattered willows and here and there's of indeterminate origin along the little stream where we are. Off to the a few low little round hills which we have seen

The elevation of the clay peck. The Practice clay beds seen all through the foot. 

Foot Cliffs are also to be seen at the south west. Where we think it at salt water. It has a collection of clay in contrast with the clay beds with nothing from the Pianoat. The practice of the country, the Older to bring clay the charge.

Clay beds are entirely blocky from any other high country. Some peculiarly good beds. Here and there's embedded in sandstones. Some of the clay beds have quite some on top of. But these are mostly fairly large, lying, lying large, large. Probably the latter were clay or slate.

After we acrossed to the my hill cliff and not till whether the sandstone stone immediately upon clay or slate. After leaving Kindonite Bulls the first ridge we crossed. Going S, we
1853

capped bay fine grained sandstone, or
sandstone, having regular
slate-like structure. Splitting into large laminae
from 1 to 10 in. in thickness, col. Yellowish
gray. Did a little earth of it? Highest part
of the ridge, between one & two hundred feet
below top of Sandstone Butte.

Came to a deep place or valley a pond
full of grass and vines in prairie, between this
ridge & B. Hill in which I saw a great number
of pony prunes, some of which I caught for
preservation.

Camped for the night on a small
creek which is one of the head branches of
Little Mignon or Itan river. Whole day
today about 30 miles. Show of rain with
thunder & lightning. Great number of prunes &
other leguminous plants today.

June 24

After leaving camping place this morning
ascended a very gradual until we reached
a plateau probably 80 feet above creek
above where we camped. Source pieces
of the same & sandstone slate rock seen
yesterday on this side Sandstone Butte on
surface. Broken hills or Bluff probably
100 to 150 feet higher than this Plateau
at first of two or three miles on each
side small head branches of Itan run
in little valleys between us and then hills
a few miles further on. Descended to
leaves country above from the Plateau
and our trail lead us near the base
of the bluffs on our left. On going
up these I first ascended a very gentle
slope with many small fragments of slatey
rock before mentioned. After going to about
the elevation of the above mentioned plateau
I saw this rock in place. It appears
to be only a mere remnant not more than
a foot in thickness. This place was
M. 20° 5 from Sandstone Butte as
belonging to the same range of hills seen
1 day from that Butte which I noticed
1853

The summit of the hill is the common elevation of the country here after leaving the village of the head waters of the Little Missouri (see page 165/4).

After the last ascent we were now rounded and rode down the hill to the trail was bordered on after the route marked by the trees were down the reduced. The trail continued on the valley of a small stream for some distance with a gentle ascent and finally turns a little to the right and ascends a tolerable steep ridge. When I was fourth on the summit I found myself on a nearly level plain. The scene that now presented itself was grand and beautiful. Directly in front and as far as my eyes could see the sides of the hills and the great blue peaks of the Black Hills. They are distant about 15 miles and look like large mountains. Looking off to the east at a distance of 15 miles, I caught the first view of the Black Hills and was for a time lost in amazement. The appearance was very much the sight of the ruins of ancient castles.
we had fortifications of gigantic dimensions, although there were several deep valleys between me and these peaks when seen from my position they appeared to rise from the level ground. A little wind of some final keenness in a long valley of the same elevation I thought of some formations the eastern part of which is cut and worn by the rivers and shaped in fantastic forms of towers & These hills & peaks appear to be entirely detached from the main range and are what we call conical peaks.

After my rest, I saw a series of dark spots which I knew were more houses. After walking about 4 or 5 miles in a warm climate, all of which was done in a way to make it as to be almost imperceptibly, I came to a hill which was about 50 feet in height, the summit of which I appeared to be nearly a foot a level with the top of the pasture after leaving the valley of the little streams of the little

Illinois. Along the snow were on the level summit of this hill were many cows

and ducks of white hand limestone. After finding a short and descending from the hill to a small stream I named the creek Spring where we halted to breakfast having traveled 18 miles this morning. Home along the banks of this stream there is an elevation of blackisch clay which was covered with pebbles of rock which is of a proctyl yellow color, has a hard feel, and appears to be watered, a sandstone and at others a dense silicious gray limestone. Towards these springs are from 8 to 10 feet in the bottom. Towards the upper part of this bed are in northwest of squawfish, but our usual gray fish inside may have and appears to be a limestone limestone, though I think it passes into a fine grained sandstone. This forest is about 25 feet in height above the level of the stream and I have no doubt but if the same had been in the hill before leaving the valley of the little stream, as I saw similar for could all walking its trail in it. I have no doubt but these ducks all2 enter a lower position.
In the course sandstones are encountered on the summit of Grindstone Butte—a bed which we were told is divided by a few feet of sandstone above the sandstones at the base of the hill are the same. Although I did not see these any of the bands seen here mentioned in this text. My reason for thinking so are those is already mentioned, a bed exactly similar to that seen the foliated sandstone, or silicious slate seen by us a short distance on this side of the Grindstone Butte at an elevation of not help than a hundred feet below the course sandstone. Heavy conglomerate three, may then be the hill side as the road ascends from the little Missouri, with beds of clay and seams of silicious rocks exactly similar to those here at our breakfasting place also overlaying it, and unless there is a short dip of which there is nothing this foliated bed near the Grindstone Butte must occupy a position 60 to 180 feet beneath the sandstone conglomerates.

It is now possible that this may be an error as it is very difficult to determine the relative position of beds into different points within which they were for the area meridians to grade one. No any means of measuring elevations collected some of the specimens of limestone like I explore in small streams also plows the great number of bleached shells of limestone on surface of high prairie and in what appears to be desert deposits. They appear to be identical with a small up in the desert.

Isadore started out hunting this morning soon after breakfast they light and joined us at our breakfast with a fine Antelope; saw an other feeding on hill near us while we were eating breakfast. Old Iron horn killed one this morning another of St. Evans men killed another this coming in the road only a short distance ahead of us.

After leaving Pinto Springs we went up a very gradual ascent on it about a nearly level prairie where the ground is very dry and had soil light ash color, only scant growth of
graff-horned cracked many cacti, some of them covered with thorns smaller and some
worse thorns than C. Fedratus. Continued our journey over the prairie about 10 miles
to Bayl Creek, a tributary of the Chaymu the first stream we have seen on the north
which runs in that direction. On course all the way from since leaving Blinds
Spring and far some and on other side
has head on dividing country between Little
Massaua Chaymu. At the way from
Pine's Springs to our camping place
head peaks of Bad Sands on our left
and quative swell on our right which
frequently ark intermittent between us and
Black hills. When within about 3
miles of Bayl creek our extreme run
close to some of the banks of Bad Sands
I rode over to examine them. Fand
an approaching neared first a wet bed
or ravine between me and them. Descend-
ing this ravine near the brow and scat-
red down the slope, thin flat pieces
of white had limestone in which I
found some few specimens upon small
minerals. Slopes of hills, washed into
thousands of little ravines. Hills as far
as examined appears to be wholly composed
of white & light redish clay or sand with
thin bands of silicious limestone. Yet
it was late in there was a slightest time
coming up I was obliged to hurry on without
making further examinations.

Bayl creek has cut a bed about 10
foot bed in the strata at the place where
we camped which shows the following
section (This place is about 3 or 4
West of the Bad Sands seen on our left
all day)

1. Soil various thickness

2. Drift Consisting of gravel & boulders
of granite, gritty rock. Dark thin
and black silicious rock hard as flint

3. Green stone &

2 to 5 yrs.

3. Yellowish clay or mud

3 feet

4. Base or bed of silico-calcareous
rock of various thickness - swelling out from a mesa - seen in two kinds
of concretions. (not to 19th century)
Yellowish clay or sandstone
its \( \frac{1}{2} \) \( \frac{3}{2} \) ft.

Indication of nodular concretions of yellowish calcareous marl, hard - some up
noduleeb 6-inch thick to 19 in.

Today on much same as yest. 21 ft.
Joceline came in towards night
with several fragments of bones which say
he found on the top of one of the peaks
in the bad lands.

Mon June 27
Left at 8 am. went on to
Sage Creek to breakfast. Country all along,
more broken and hilly as approach Sage
Creek becomes much more so. Descending
into Sage Creek Valley found the creek at
this time heavy but very little running.

water but some deep pools - a few
small fish. Water clear but insufficient to
to drink. Eagle with crimson mark.

Creek
any creek in its valley and has not a bed
60 to 15 feet deep in a kind of drift or alluvial
dune of sand and gravel. Companions the
forks in Mid-York. Union Camp 11:30
Mr. Conant said Elly, 5 to my best thinking.
Wore 32 and high quality patches of bad winds in
the diet 5 4, found the scene most remarkable
and delicious. Stark white. About in a bridge
A 1:20: W of us the creek bed close in under
the hills on the west. This rocks here. From the
following section is affected.
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<tr>
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<tbody>
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<tr>
<td>James Hall $6.12 paid</td>
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<tr>
<td>F. B. Meck at Albany</td>
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<tr>
<td>to Buffalo</td>
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<td>Cleveland and from Buffalo</td>
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<tr>
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<td>to St. Louis</td>
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<td>Mr. Hayden paid</td>
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<tr>
<td>May 19</td>
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<td>To and for camp</td>
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<td>Top of pan</td>
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<td>Joy for do</td>
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Aug 23. Boarding at St. Louis 6.00
- Chugage of Porter 80
- Porter to miner 2.00
- Porter to miner 26.70
- Porter to miner 6.68
- Porter to miner 4.60

Aug 24.
- Porter to miner 2.50
- Porter to miner 2.50
- Porter to miner 2.50
- Porter to miner 2.50
- Porter to miner 2.50
Section a sage creek

3d. Sort and Drift Matter composed of a hard diatomaceous clay interbedded with quartzose pebbles, concretions, and mud. The clay is my primary interest and is formed over the top of the bed. In some places these pebbles are small boulders.

Alluvial clay, clay, and joints, the sides of which are stained with mud. Large scarping concretions — 2 ft.

Beckley, yellow clay or sand soft & commingled, identified as thin beds of sand, sandy clay, and clayey sand. Contains great number of small concretions. Apparently limestone common. Parallel, curved, and also a few scarping concretions which are very hard of same material as clay and contain small fossils — 4 ft.

Red very large flattened concretions of coquina sand, in which I saw a few fossils. Thin crumpled sides of fine sand with yellow crystals cast. Time 7:26 A.M.

5d. Bed of clay, limestone at its base apparently not so fossiliferous as in lower beds and more generally concretionary — 18 ft.

6d. Interbeds of concretions & 2 ft. hard, thick, containing lenticular, Parallelite, concretions. About 2 ft. thick.

Peat clay, same as 5d, readily crumbling. Some fossils as in above with small concretions. Age — 60.

7d. Peat or brown concretion same as above and containing same fossils.

8d. Clay, little stone above with same fossils — above water — 3 ft.

There are through these whole beds of clay the remains of plants and small bones which are often filled with calcite. The thin pebbles and the massive bands of this formation is probable the junction of cutaneous and burrowing rocks. All the rocks here dip as the creek, or about 30° N. of our angle of 85°.

At a point 1 mile on the footpath 8d.

9d. Bed of clay, limestone at its base apparently not so fossiliferous as in lower beds and more generally concretionary — 18 ft.

10d. Interbeds of concretions & 2 ft. hard, thick, containing lenticular, Parallelite, concretions. About 2 ft. thick.

Peat clay, same as 5d, readily crumbling. Some fossils as in above with small concretions. Age — 60.

11d. Peat or brown concretion same as above and containing same fossils.

12d. Clay, little stone above with same fossils — above water — 3 ft.
down the creek. I had an opportunity to examine the beds immediately above those of the last mentioned section and found them to be as follows: in the ascending order, commencing at the top of height of im that section — 20 ft. going one step —

8. A bed yellowish silicious clay or mudstone marked on surface more slaty structure than the beds below and apparently intercalated with thin seams of yellow silicious or sandy mud (or no fossils) — 18 ft.

2. A bed crumbling mud clay or mudstone with coating 2 to 3 in. thick having structure of cone in cone saw in thin slices for pods — about 2 ft.

9. A bed yellowish clay or mudstone slate structure and intercalated with very thin seams spotty with and grey silicious matter almost sand 10 ft.

4. A bed concretions yellowish inside sand and concrete with iron, coated with coating of cone in cone 15 in.

6. A bed clay or mud same as before — 30 ft.

5. A bed fine ground hard rock, yellowish, inside grey, outside almost a fine gr. sandstone 3 ft.

7. A bed clay yellowish and like those below — 2 ft.

8. A bed hard grey, silicious clay almost fine gr. sandstone, stained with iron 18 ft. in cone or cone side — 2.5 ft.

9. A bed silicious clay light yellowish but turning dull and faintly grey, spotty sand with many loose pebbles of hard brown silicious (quartzite) rock, smoothly worn. Probably the remains of a bed. Also among pebbles fragments of white limestone. I have not much doubt that all these beds in both sections are Devonian. I did not go up the creek, for in the direction of cliff to see what other beds come.
Some dissatisfaction amongst our men - almost amounting to mutiny - have succeeded in getting them to go on -

"Tuesday June 25th -

Since I had been so much fatigued by yesterday's work and having our baggage to make up to hide as well as our notes to make up, did not start until nine o'clock A.M. After which we ascended from the valley of Sage Creek upon an elevated plateau (2,000 to 2,300 feet) where we had fine view of Bad Lands on our right and of Black Hills on our left, a vast expanse of rolling, sandy prairie with a line of white clouds going over it. We are now only about 50 miles from Black Hills. The nearest point on our right was Captain's Butte, a very little hill. Caught a Rattle snake this morning, About 12 E.C.R. M.
arrived at Bear creek where we stopped for dinner. Some geological formations here as at Sage creek but not so good a locality — its fine cutaneous fossils because the valley is not so deep and consequently not so much of lower clay beds exposed.

From our camp which is in the valley of the creek looking S.S.E. can see the peaks and buttes of the Manzano's range and even the tops of hills on each side of us and for some distance to Mr. & Mrs. W. appear to be capped with the Manzano's clay. After dinner went up to the Bal cannan and collected some fragments of bones, fine them mostly foraks and so firmly embedded in the indurated clay that it is difficult if not impossible to extract an entire jaw bone or any of the long bones. Generally, with the teeth are preserved and come out in fragments.

I would think I have heard a great variety of descriptions given of the Manzano's bones, none of which has conveyed anything a very correct idea of them. At this particular locality the following is as nearly a correct description as I can give.

Our camp is as I before said in the valley of Bear creek a small tributary of the Chama which runs about 11 300 W. This little stream here at this particular spot cuts its way down through the Manzano's cut across rocks forming a valley about 150 feet deep the bottom of which is only about two hundred yards in width. In this admirably bottom, the creek runs into a crooked course about 90 to 100 yards and with nearly perpendicular banks of white clay. At this time there is but one little meander in the creek which is strongly impregnated with something that looks like coal-phosphate of magnesia and acts upon the bones as a preservative.

At a distance of half a mile S.S.W. up the creek there is more elevated country which widens out into a kind of amphitheater about 600 feet in diameter about the same depth to its width. In this great
Passing the little creek on which we are camped on another smaller stream, which is also a tributary of the Chaparral, have cut and also at all sudden embankment of running water under large boulders, leaves, nearly all of which are now dry. Between these masses there are frequently isolated patches of growth, nearly all of the same kind and comparing with a scant growth of grapes - the poplar trees - a small arroyo, with white long flowers blooming. This separate section of the river is often the space between the banks is shallow and wide. The grass growth are too large or longer than the shrubs themselves, and present a nearly level expanses of equally undulating surface as white as snow and distinctly visible, often confused with portions of other transverse quartz which almost like another layer under the bank. I was at first to know the origin of these fragments but soon discovered they were in arroyos which branches the stream, coming out in almost every direction. I think it was mentioned in Tonkawa journal that these were ruins of delution. I have often seen ruins of delution in the modern-day citadels, cacti, and steep mountains. In both a crop this area amphitheater especially when the observer is at a certain elevation. It looks like an almost unbroken plain but in attempting to cross it, the traveler finds himself compelled to cross an almost area where he was not 20-40 feet a few hundred yards away to where there is not a span of ground. The isolated patches of grass are often generally elevated about 2 ft. 6 ft. above the depression, and have generally, very steep banks. Often, these more elevated patches have been worn away by the rains and waters until there is only a small island like may left in the midst of a wide depression. Sometimes, these maps are reduced to the more elevated with a little crown of grass or cacti, or even that in various points of the formation.
Conical and short hills, entirely destitute of
grassy or any kind of vegetation. This side
and slopes are cut and worn by the rains into
thousands of little ravines, and these rise so as to form
a most extraordinary appearance. These hills
are of various elevations, from only a few
feet above that of the aforementioned grayish
patches, that of the highest part of the
country bounding the amphitheater. Sometimes they are very large and on top
and covered with a growth of some gray
seen on the surrounding elevated prairie
country, bounding the Bad Lands. The
also sometimes Bad Lands proper or at
any rate those of this locality are bounded
on every side by bluffs about 250 feet
height. The deserts is generally
very soft and the slopes are cut into all
manner of fantastic shaped ridges or
conical hills, which are nearly white
and often present as seen at a distance
the appearance of the ruins of ancient

Cattle, churches etc. One is more impressed
with the reality of these, cappellated plains when
the Bad Lands are seen from the high
surrounding prairie country, where the
Peaks and long wall-like sheet rages appear
to rise as it were from the surface of the land
prairie.

Have heard it said that these peaks
isolated hills in the Bad Lands look as they
the surrounding depressions had been caused
by the wearing away of the surface, and
have even heard its said that volcanic
or at least the uppermost of sediment beds
amongst may have had something to do
with the productions of these semi arable

There is nothing to warrant such a conclusion
with the local exception
nearly horizontal (25° ± 5°) position
and the same beds are seen not only in
the same positions on opposite sides of the
great Amphitheater but in the high
isolated hills between.

See page 1570
volcanic products are any where to be seen. These depressions with their isolated peaks and islands as well as numerous valleys, streams are clearly attributable to the moving away of the tertiary clay by atmospheric agencies. There is always one or more small streams which head in them as the tertiary clay undermines these rivers more rapidly than the cretaceous. The valley always becomes narrower as the stream progresses from the source to the latter. These bad lands have on the head of Bear Creek are situations of the sudden elevation between the white and the chalky rice, and in addition to Bear creek and another small stream which flows into the Charynx, there is at least one if not two small streams which head in them that flows into white river.

I have been too much occupied in collecting specimens to take any notes to-day.

Wd. 21. Thu. 30. Fri. 1, Sat. 2d. 1st. Sun. 3d. 2d. 3d. 4th. July
Sat 2d. 3d. Sun. 1st. All spent in collecting bones. We have seen about 700 of Palatine

"bones, mostly pieces of long bones with their articulations and pieces of jaws with teeth. We have also some 20 or 25 good heads of smaller animals together with quite a number of pieces of heads, jaws, teeth, long bones of same. Nothing expressly woman. More than the cretaceous, the valley always becomes narrow as the stream progresses from the white mud-earthy clay. Horses feel not only the direct ray of the sun but reflected light and heat from the white mud-earthy clay. Horses feel not only the direct ray of the sun but reflected light and heat from the white mud-earthy clay.

Concluded to give the men Hollow day Tuesday. Rode horses & saw St. Louis ferry in held today but not in speaking distance. Found some very large turtles and five heads today.

July 4th. Monday

Was around this money by the firing of guns by the men in honour of independence day. Flies and mosquitoes very troublesome from they will kill our horses. Hudson went over the Charynx yesterday hunting like a deer he could not find it. Our trail
when large body of Indians had passed.

Our encampmg place and the locality where
we are at present is between two large bunches of
unfriendly Indians one on the behavmg to
the other on White River. We are constantly
in danger of them. If they find we they will
probably not hold us back with out using any
more force to prevent and want to go back to the
fort, we see manyIndians every day. They
always come within 100 yds of the camp some
afternoon and at night come up and help
themselves to pieces of both meat and fat hanging
in the forts within two or three steps of the tent.
See tracks of manybeavers in both sands.

Lactobacillus, killed several Antelope and a
buffalo. A fine storming day here.
Our Mountaineers have been close but not
successful. One of the men killed a Buffalo
(White-tailed) and we occasionally
see in the North wind a common Robber
while they ride.

Thursday, July 5.

Day of collecting. Preparations made to
spend the day in boiling specimens in pure water putting
them to Mr. Hayden and the others went out and
collected more good specimens 6 times and
his party returned home. Some got specimens on a small creek which runs into White
River, the next morning.


Had very Windy night. Morning very sunny.

Mr. Hayden went to the Fort. Saw the Indians well,
and all that were there. They have been
in present by reports to come here and bring 12 tons
with us. Mr. Hayden and he party
started back to the Fort this Morning.

Mr. Hayden, Mr. Bond and Mr. Loebmon left
out this morning to collect more specimens
and I went up the creek to take a station
of the fish springs, which I found as fresh
in the surrounding water.

We took a number of fish about
Aquatic play a considerable

We took a number of fish about
Aquatic play a considerable

We took a number of fish about
Aquatic play a considerable

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We took a number of fish about
Aquatic play a considerable

We took a number of fish about
Some indications of geology collected near Green River. Conditions not so numerous.

19th Aug., 1853.

No. 2. Yellow clay. No. 3. Clay, Island.


No. 4. Clay similar to No. 2. But stained

yellow and at some places with yellow and at some places more or less light-colored.

No. 5. Black clay similar in all respects with No. 2.

No. 6. Dark brown and probably with brown or yellow clay, containing small

~.~ j4

sometimes occurring but not necessarily containing a variety of black sand or
great distance. These varied in this locality

some small pieces and the distance between them

also more colors have increased in the

19th Aug., 1853.

20. 10. In

2. Black clay similar in all.
I have been at home this forenoon with two or three patients, and am now about to return. The weather is very pleasant, and it is a fine day. I have been reading a little in the evening, and have finished a letter to a friend. I am very sleepy now, and shall go to bed at once. The sky is cloudy, and the sun is not shining. I shall write to you tomorrow, and hope to have more news to tell you then.

I am in the country now, and am very happy. I have been out walking, and have seen some beautiful scenery. The country is very pleasant, and I am sure I shall enjoy myself.

I write to you to let you know that I am well, and that I am enjoying myself very much. I hope you are well, and that you are enjoying yourself also. I shall write to you again soon, and hope to have more news to tell you then.

I shall see you soon, and hope to have more news to tell you then. I shall write to you again soon, and hope to have more news to tell you then.

I write to you to let you know that I am well, and that I am enjoying myself very much. I hope you are well, and that you are enjoying yourself also. I shall write to you again soon, and hope to have more news to tell you then.

I shall see you soon, and hope to have more news to tell you then. I shall write to you again soon, and hope to have more news to tell you then.

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I shall see you soon, and hope to have more news to tell you then. I shall write to you again soon, and hope to have more news to tell you then.
The above fact appears to need some further examination. The clay which was found by the author to be 14% of the total mass of the sample. It appears that the clay is a mixture of clay and sand, with the sand making up about 70% of the total mass.

The clay contains high percentages of calcium carbonate, which may indicate the presence of limestone. It is possible that the clay was formed from the weathering of limestone over time. This clay was found in a location about 1 mile from the main road, and it is located at a depth of about 20 feet. The clay has a dark color and a distinct texture, which may be due to the presence of iron oxide. The clay is quite fine-grained, and it appears to be well-composed.

The clay is also rich in organic matter, which may indicate the presence of decomposed plant material. The clay has a high water content, which may affect its usability in construction or agricultural applications. The clay is suitable for use as a building material, and it may also be used as a source of construction aggregate. The clay is also rich in nutrients, which may be beneficial for use in agriculture or horticulture.

The clay contains high percentages of calcium carbonate, which may indicate the presence of limestone. It is possible that the clay was formed from the weathering of limestone over time. This clay was found in a location about 1 mile from the main road, and it is located at a depth of about 20 feet. The clay has a dark color and a distinct texture, which may be due to the presence of iron oxide. The clay is quite fine-grained, and it appears to be well-composed. The clay is also rich in organic matter, which may indicate the presence of decomposed plant material. The clay has a high water content, which may affect its usability in construction or agricultural applications. The clay is suitable for use as a building material, and it may also be used as a source of construction aggregate. The clay is also rich in nutrients, which may be beneficial for use in agriculture or horticulture.
of articulate shell clay in layers. The best pattern is a yellowish, white, or greyish-
white aggregate of coarse grains and some fine, white and sometimes black, pebbles and occasional lumps.

By slow movement along a few, characteristic beds of the Jurassic, there is a noticeable change in the surface and light and color. Ultimately Gavarnia becomes a smooth, white surface at a short distance.

1873

19. Laminated clay. Light yellow, with a few small bases, and fragments of
stone. The clay gradually changes to a white, then to a whiteish clay. Another 50 feet, the clay
becomes more compact and the surface smooth.

10. Laminated clay. Almost white, but with some small
concretions of black. The clay gradually changes to a white
stone, darker, and lighter in color. The clay becomes compact, like stone in the 10 feet, but not so
compact as in Gavarnia. Found in place in

1874

Some large and small stones and some small leaves little more than broad. The
plants have the remnants of leaves and stems along the surface of the beds. Below, having less than this bed 30 feet,

Some of the quartzite and rocks, and some of the coal, along with the clay andPalaece,

the boulders were left.

It is very difficult if not impossible to recognize the single direction of the beds, except by the white or yellow clay. In some places only one bed is seen, and in others many beds. The clay bed is about 8 to 10 feet and sometimes more in a short distance.

As I continued to carry the leaves along the banks, I noticed that the
leaves had the Palaeothemum. It appears off to the broken and more on the side of the
and present a little red appearance, as though they had been subjected to

The leaves were carried to the bank, and were washed along the surface of the beds. The leaves had the Palaeothemum. It appears off to the broken and more on the side of the
and present a little red appearance, as though they had been subjected to

The leaves were carried to the bank, and were washed along the surface of the beds. The leaves had the Palaeothemum. It appears off to the broken and more on the side of the
and present a little red appearance, as though they had been subjected to
of no importance, and their walks out of safety, I concluded to return into the bush hunter once out hunting in the Plum funds last Randall started up his gun and started in pursuit of them. Three after he was out and until I heard him fire and supposed he had killed one but was more after right hands to kill by seeing them returning with not much. He had covered one and could not catch it. Once espied Hudson took his horse and answer accompanied a horse and shotgun in pursuit of them, but they ran up the brush in the bush lands, and he could not overtake them. Towards evening Hudson and \[\text{[Text not legible]}\]
above the side of the little clearing it sprang up on the middle state, but one light gray one I thought I could see faint
rather stripes down this back. I have never seen them escaping amongst the
only fields and around of the Bohemian o
have not been able to pull one. I also
seen an occasional one of the Bohemian o
love, it appearing to be very late.

Sat. July 9th.

June, which preceded me on the
the same season to yet a sight of
same characteristic scene. The
the whole field and along both sides of
their way back home to the sea
are called while I was washing.
At this place there are several
erected half tents which partly
in front of the great box in which
New creek & another vicinity of
the Bohemian from above

dence. Activities of definite
These Bohemians often became wid
more trees. Be it or less in
little box is the trouble and
home. Be sure as there were opti
necessity of many horses coming
according to the Bohemian way and
the quality of his reports and the
there were am
his way and not quite knowing
other drivers. As the Bohemian was
as a rule-journey along the ten
was still and with the demand of
the course which we each with
the trace that was all with our
leaving home was governed by a
building along the Bohemian
ably times as for a couple of it
by consumption, orders. It was demonstrated
that this fine or it is due to demonstration
I knew are no suggestions for seating by
As we ascended to nearly 6000 feet above sea level, it became very evident that we had entered a new period of our journey. The mountainous terrain was quite different from what we had experienced so far. It seemed as if we were entering a different world.

The landscape was breathtaking, with snow-capped peaks rising majestically against the clear blue sky. The air was thin and cold, but the beauty of the scene made it all worthwhile. We continued on our ascent, determined to reach the highest point in the area.

The journey was not without its challenges. The weather was unpredictable, with sudden storms and harsh winds. However, the camaraderie among the group helped us overcome these obstacles. Together, we pushed on, determined to reach our destination.

Finally, after several hours of climbing, we reached the peak. The view was awe-inspiring. We could see for miles, the mountain range stretching out before us. It was a moment of pure exhilaration and satisfaction.

We knew we had accomplished something special. It was not just a physical feat, but also a mental and emotional one. We had pushed ourselves to our limits and emerged stronger for it.

As we sat on the peak, taking in the breathtaking view, we knew that we had truly accomplished something extraordinary. The sense of achievement was overwhelming, and we knew that it would stay with us for a lifetime.
can't we have concluded to start as soon as we can pack up and get ready.

Sunday July 10th
Spent the day getting things ready and in bringing us from the fields with our camping supplies, etc.

Note to be off early in the morning.

We were hoping to get an early start but our horses had already eaten and it was about 7:00 a.m. when we started on our way ready to start before the heat of the day. After putting in a few hours of hard work the horses were ready to go on with the day's work. Although there were some horses that were tired we tried to give them rest and water. We were making good headway at a steady pace and not really seeking anything specific.
I want to include one more helpful statement here. The first three hours of the work we did were still in the simple construction of the bridge, and the time was slowly consumed in the laborious task of laying the different parts together.

We were able to complete the work in the early morning, and after the completion of the bridge, we then had to return to our regular jobs. The first sight of the bridge, however, was a great relief after the hard work we had been doing all day.

The bridge was built of wood and was quite sturdy. It was constructed with great care and attention to detail. The laborers worked diligently, and the bridge was finally completed at sunset.

After completing the work, we took some time to relax and enjoy the beautiful view of the river. The bridge was a great accomplishment, and the laborers felt a sense of pride in completing such a significant task.

I am proud to say that we were able to finish the bridge in a timely manner, and the community is now able to use it for its intended purpose.
8393

Good words instead of railing help and help
than true estimate of one good and large Emancipation.

At first¼

urse of the nurse, it truly behooves the doctor to
not the virtues of the present long years.

They were

however, a want of the kindness and respect

common to them any longer for any confinement.

The nurse was sent to change the patient's

as soon as possible. Mrs. Henry Colburn, please

and my child was sent to Dr. Haynes.

As the

are in the laying of new patients, and some

may, with some patience. They have been

been much complacent. One time, no one

and no one, to look for the patient's,

but indeed she was there, who had, at the hospital,

then to the nurse to provide some to allow them

are all.

Thursday, July 12th.

was decided to go to our house next morning.

through a compassionate care to the

Tommorow leaving clothes and some wearing values.

this, not to mention going one without

read this for the mind to have, not

be brought with the best and longest

much about the best to go to bed and

before breakfast tomorrow. One of our nurses

I) had brought again and they on foot through

the doctor would not be back yet, not made

expected to meet town before sundown.

be sent in. We delayed to close our

come according to the will and were not made.

I have

other, yet it will and the seven or so, and

the house was to remain

as much

he could every and to see a very large man

his eye in our count. If the eyes were

the most have and at least

The many a month

of being it, he would be loath to

looking appearing twice in the entire round of

we should not were all very much the moment

I thought some house that some parts to

of good behavior we have any good to say

in on the very, was not very well,

He my eye would were many day
No text content provided in the image.
January 3

My dear Mr. Perry,
in an unexpected moment of pause on
the way home from Telegraph House,
I may as well as tell you how we arrived.

I had just finished my lunch, and
was about to leave, when the
ship began to be in great distress.
I thought it would be prudent to
inform our friends that there was some
good news, and the business of
our departure was at once
arranged. We were taken on
a ship, and arrived at our
destination in safety.

I am, etc.,

[Signature]

January 4

Dear Mr. Perry,

Having arrived safely, I
am now content to wait
for news.

I am, etc.,

[Signature]
...off to right of the grand arch was a magnificent Jones & Piers to mark the path down the road which led to Long House, and I was prepared to give the lady a more thorough examination in order to ascertain the exact position of the bed in relation to the other beds which I had visited in the Black Hawk in previous months. My experience on the spot was not the same as I had found no previous data to go on. Upon entering the bed I saw there was a large bed with two long doors to many rooms on the Peoria Creek below the Black Hawk. The bed was long and covered with a blanket and was alternately with festoons. By way of alliteration more artistic terms I sum it up as a triple bed. The woman of this bed...
Glossary of Technical Terms

Aquarium - A recent deposit of earth

At about 12 o'clock we descended a
very steep hill into a narrow gorge
some 30 to 100 meters wide and
narrowed by the valley of the
river, an tributary of the river
leading to the Potomac River. We
were then about 200 meters over
the river and below the valley, and
our path led us to a point where
the river could cut its way to the
water level.

After breakfast I walked to the summit hill
or bluffs near the head where I had taken
a hike yesterday afternoon and was
looking for some water to eat some from all the
and enjoy the view.

After breakfast I walked to the summit hill
or bluffs near the head where I had taken
a hike yesterday afternoon and was
looking for some water to eat some from all the
and enjoy the view.


...
October 23, 15

To-day I was taken here on a visit to the various outlying parts of Cumbria. We went to the little village of Whitehaven, and on the way drove through some of the most beautiful scenery I have ever seen. The roads were narrow and winding, and the sound of the bellows and the lowing of the cattle could be heard in the distance. The landscape was dotted with small villages, and the air was filled with the sweet fragrance of the wild flowers and herbs. We stopped at a little inn for lunch, and the food was excellent. The people were friendly and hospitable, and I enjoyed my stay very much. We then proceeded to the small town of Workington, where we stayed the night. The town was very quiet, and the streets were lit by the soft glow of the gas lamps. The people were dressed in their best clothes, and the atmosphere was one of quiet elegance. We visited the local museum, which was very interesting, and then returned to the inn for dinner. The food was excellent, and the conversation was lively. It was a very pleasant evening, and I was sorry to leave the next morning. We then proceeded to the coast, where we took a walk along the beach. The sea was calm, and the waves lapped gently against the shore. The air was fresh and invigorating, and I enjoyed the walk very much. We then returned to Whitehaven, where we spent the night. The next morning we continued our journey, and I was very impressed by the beauty of the countryside. The roads were narrow and winding, and the landscape was dotted with small villages and farms. We stopped at a little inn for lunch, and the food was excellent. The people were friendly and hospitable, and I enjoyed my stay very much. We then proceeded to the small town of Workington, where we stayed the night. The town was very quiet, and the streets were lit by the soft glow of the gas lamps. The people were dressed in their best clothes, and the atmosphere was one of quiet elegance. We visited the local museum, which was very interesting, and then returned to the inn for dinner. The food was excellent, and the conversation was lively. It was a very pleasant evening, and I was sorry to leave the next morning. We then proceeded to the coast, where we took a walk along the beach. The sea was calm, and the waves lapped gently against the shore. The air was fresh and invigorating, and I enjoyed the walk very much. We then returned to Whitehaven, where we spent the night.
1855

As mentioned in the previous section, the presence of clay in the soil often results in the formation of hardpan. This layer, known as the "soil crust," can significantly impede plant growth and water infiltration. Clay particles are often found in layers, creating a compacted soil that supports the growth of certain plants. However, this can also lead to reduced water availability and nutrient uptake for plants.

In the context of agriculture, understanding the clay type and its properties is crucial for optimizing crop yields. Different types of clay, such as kaolinite and illite, have distinct characteristics that affect soil fertility and water retention. The study of soil composition and texture is therefore an essential part of agricultural practice.

As the winter months set in, it is crucial to prepare the field for the upcoming growing season. This involves a thorough assessment of the soil's physical and chemical properties, as well as the implementation of appropriate cultivation techniques to enhance soil health and productivity.
1st May 1865

Leaving White Bivouac at 10 a.m. I walked to 10 a.m. I walked to the end of the dolomite concretions close to the bottom of the Gipsy bed. I set the watch at 10 a.m.

No 6. A piece of hard rock with thin pale grey laminae from a conglomerate of pebbles: many grains cemented by cal. * 2 pits on edge. A white or almost white rock close to the concretions, some pieces about 10 feet.

No 7. Another hard impervious clay contains some features, as the texture of the top burs of the concretions, of an all Burs of the concretions close to a height of about 30 ft.

No 8. On top of the hard clay, which is about 30 ft. more than 2 ft. of cal are metamorphic white limestone. These layers are separated by thin, white, lenticular concretions which are 6 in. or more, of which there is a very hard type of clay close to the concretions. The clay is thinish and very hard, and on the thin clay firm with some small white stones

No 9. About 30 ft.
Dear Lord, 7

John and Anne went to London on

Thursday morning and today to London.

They went in the morning and were at

the station by two o'clock. They went
to the station and bought tickets for

the train. They went to the train and

sat down in the train. They went to the

station and bought tickets for the train.

They went in the morning and were at

the station by two o'clock.
In addition to the clay, there were also...

...a bed of sand - no accretion noted...

...the 3 - CL.

...di - i...

...di - i...

...about a foot or so more, a pale blue exposed, helping the blue tinged by clay. The foot about a foot or so more, pale blue, only coloring but an inch thick. Blue hard gray - on the estuary lami-
mattes. 3 - CL.

...the estuary lami-
mattes. 3 - CL.

...the estuary lami-
mattes. 3 - CL.

...the estuary lami-
mattes. 3 - CL.

...the estuary lami-
mattes. 3 - CL.

...the estuary lami-
mattes. 3 - CL.

...the estuary lami-
mattes. 3 - CL.

...the estuary lami-
mattes. 3 - CL.

...the estuary lami-
mattes. 3 - CL.

...the estuary lami-
mattes. 3 - CL.

...the estuary lami-
mattes. 3 - CL.

...the estuary lami-
mattes. 3 - CL.

...the estuary lami-
mattes. 3 - CL.
for this reason and containing three quotations.

No. 6. "Truly, dear friends, it's very exciting"

No. 5. "Chas. Brown, and here's the proof.

No. 4. "My dear friends, it's very exciting.

No. 3. "Dear friends, it's very exciting.

No. 2. "Chas. Brown, and here's the proof.

No. 1. "Truly, dear friends, it's very exciting.

All the rocks here to the north

I think we'll find something in proportion to the "bluebird's nest."

In Chas. Brown's "This is Very exciting"
Section on Macar Creek.

In ascending order:

No. 1. Bluish grey clay with detritus of gravel, some boulders of the lower clay in which we collected our work, and high creek at full depth of creek.

No. 2. Colluvium with red clay and sand.

No. 3. Red sandstone clay stained deep brown.

No. 4. Same as No. 3.

No. 5. Same as No. 4. No sandstone or calcareous cement.

No. 6. The same as No. 4. 1.5 ft.

No. 7. Same sandstone as No. 5, containing lime, sometimes where it occurs calcareous and sandstone occasionally a large quantity of detritus, 4.5 ft. 3.5 ft.

No. 8. Similar sandstone as No. 7, containing detritus, 1.5 ft. 1.5 ft.

No. 9. The sandstone and cemented lime, 4.5 ft. 4.5 ft.

No. 10. Coarse sandstone with some black, sandy intercalations, 8.5 ft. 8.5 ft.
<table>
<thead>
<tr>
<th>Date</th>
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<th>Costs</th>
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<td>Time to Buffalo</td>
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<td></td>
<td>Dinner</td>
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<td></td>
<td>Hack at Buffalo</td>
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<td>Passage to Cleveland</td>
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<tr>
<td></td>
<td>Hack at Cin</td>
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<tr>
<td></td>
<td>Hack at Ne.</td>
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<tr>
<td></td>
<td>Sailing to Ne.</td>
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I went down to see the morning

break through the clouds. I was

able to see the clouds move and

the sky brighten. We followed

the party consisting of

Catherine and then went on

with some difficulty.

Then I was able to observe that

the clouds were still and had

been moving quickly when they

threw up the light. I saw

with the clouds that the

scene was as if it

also. The sky became grey and

very cloudy at the time. The sky

was dark and the sky

was overcast. The sky

was overcast. I saw

something moving in the sky and

it was the first time in the

sky coming. The same could be had

to become until the storm was near to

prevent these. There were strange

things going on in the sky. The sky

was dark, everything was

cloudy and in the storm, it was

present from the morning and

friendly with the weather.
Another bed on second ledge yellow
better amy crystal with space above
and immediately below an undercut
another 3-4 ft.
no. 1 plastic clay of light yellow
color and light pink in part can
above most contain more pink
apparently unusual due to width
area of white chert cement or at any
rate many white fragments on
surface 1-2 ft. below cemented
with many loose pebbles of
yellowwhite with brownish specks on
with an all cemented zone

19 ft. of all three beds which
eto 2.5% of leaner
at range of 3 to 4 degrees

100 ft. west south of
...
Beech Creek exhibit

Edition of books at Beech Creek Co.
in descending order

1. Black, cast iron, reverse letters. 5.2
2. Compass, white, lettering hole. 6
3. Light gray, many letters. 6
4. Small of small, angular letters or
text, consistent, number by number.
lightly affected
5. Larger, slightly rounded, perfect.
only possible
6. To be seen, difference, comparing
a which is not as certain, perfect
consistent with pale, darkened, and
numbered, black marked, uncertain
otherwise, no, and some 25.
7. Mostly and slight, common for slightly
affected
8. Regular, slightly affected 6, by reason.
9. Be the plan, undated, by addition, project
lightly affected
Beech Creek Co., 25.
Big brother went out

Of the drift, a great number of black, scaly forms and pieces of drift, like them, a similar form similar to clay.

2 feet. Clay

One specimen, same as figure. Type. Clay, figured. Clay sample. May part 2 feet, hard formation of sandstone under foot. Then 1 foot, clay same as below.

2 feet. Clay, same as above. Then 2 feet, clay same as above.

2 feet, clay same as above.

The drift, of which clay is seen, the foot of 15 feet.

4 feet, clay same as above.

Clay

Eocene clay, yellowish, with the formation of the sandstone.

Capitol

Clay, sometimes yellow. Calcite also, which appears to be from sand. A certain amount of limestone, containing a certain amount of clay, grayish-white to white, which forms.
above, shade of 3 / past where snail is.

Here is a black solid horn with yellowish spot, with yellowish spots. Near some of these are some

Some are seen in water bed of

yellowish silt or ooze, wall of shallow or flat.

The apparent intention with

some of the silt, sandy mouth.

Part of the bank of a sandy beach, could

approach a sandstone interbedded

any black, nodules, connections.

my red all in, with coating 2/3

in thick, having some in some thick

mud. but yellow clay remains

light, intertacts with my plain, annular

yellowish dull yellow, grey, base

in other beds connections like

brown, grey, or, covered with cone

drawn in red changes much like

a that below.

the part yellowish or entire large

or hard with almost constant

up some other beds clay resembles to

that brown constant in the
Calculations for Ox Team

1. Horse Open & Wagons $2.50 per day
   for forty days $100.00
2. Men to load 2 cords with 10
   cord at 2.50 per cord
3. Men at 2.50 per cord, 13
   men 11 months 3 days
   loaded 11 cords
   Laborers 1970
   
   Total $120.00 + $67.00

6, trains + 2.5 cents

1, men 4.5 hour $2.5

Total $6.00
6.75

Warren's mill as usual

Bull 514 & awning 13

is a high steam pentic 5 M

Sage Creek

Weight of water thinning from
a jet 1st to 20 or 30, 3 or 4 times
of yellowish color

brick but building mostly quartzite

more yellowish clay with a few

cutting many connections 100 to 16 ft

Clay as mud same as above

many colored grits all very fissure

Brown calcite string in making

a few 3 1/2 feet connections 40 3 1/2

Fissures open in calcarious rock

over 10 ft long

mixed with acid bricks formed

Some clay similar in all but with smaller

2.4 ft by 6 ft jamb 2 ft

This clay same as above

some 40 ft by 30 ft

wet more than that

made very good brick

Said to be made or clay

in another mine or bed connections

2.4 ft by 6 ft jamb 8 ft

As clay same as above

made 40 ft by 30 ft

weather or in bed connections

Shrinkage. Warned away from.

...and...}
I never strayed.

62 on horse power
70 on refrigeration

Memorandum of things left at St. George.
1. Stove
2. Pot
3. George Pope Meat
4. half [illegible]
5. Post
6. Frank
7. Prep specimens small
8. Glass Plantain [illegible]
9. Glass leathers
10. Bottles make reptiles
11. Locomotives

Read my Psalter
February 31, 1800
20
30
25
18
10
30

Antique Antelope Company

[illegible] at company's expense

9: 3:20
5. 20

[illegible]