

III

U

Glennwood, 1906

Balsam

Walvern

Red Oak.

Hamburg.

87-75

10'

1
Blennwood Ia - Aug, 29 - 1906
Examine cut on street leading
from new C&O depot
to town, down hill.

At 26-5 ft. depth, consists
of fine white sand, & has
an occasional fragment of
lime nodules.

There are fossils scattered
all through, on both
sides of street.

Met Mr Seth Dean
 & secured much information -
 will give me details of beds
 in wells.

A cut 25 ft. deep in
 sp. new C3 & C4 deposit
 at Glenwood. The
 upper 5 or 6 ft. is
 looser & redder. This
 shades below into a
 yellow loess streaked
 with iron, ridges
 with occasional horizontal
 plates, a few
 loose nodules, &
 in one place a faint
 short line of broken
 shells.
 Fossils are irregularly

distributed, chiefly in
 lower 10 ft.

See nodules & samples
 One from 4 ft from base &
 the other 3 ft from top.

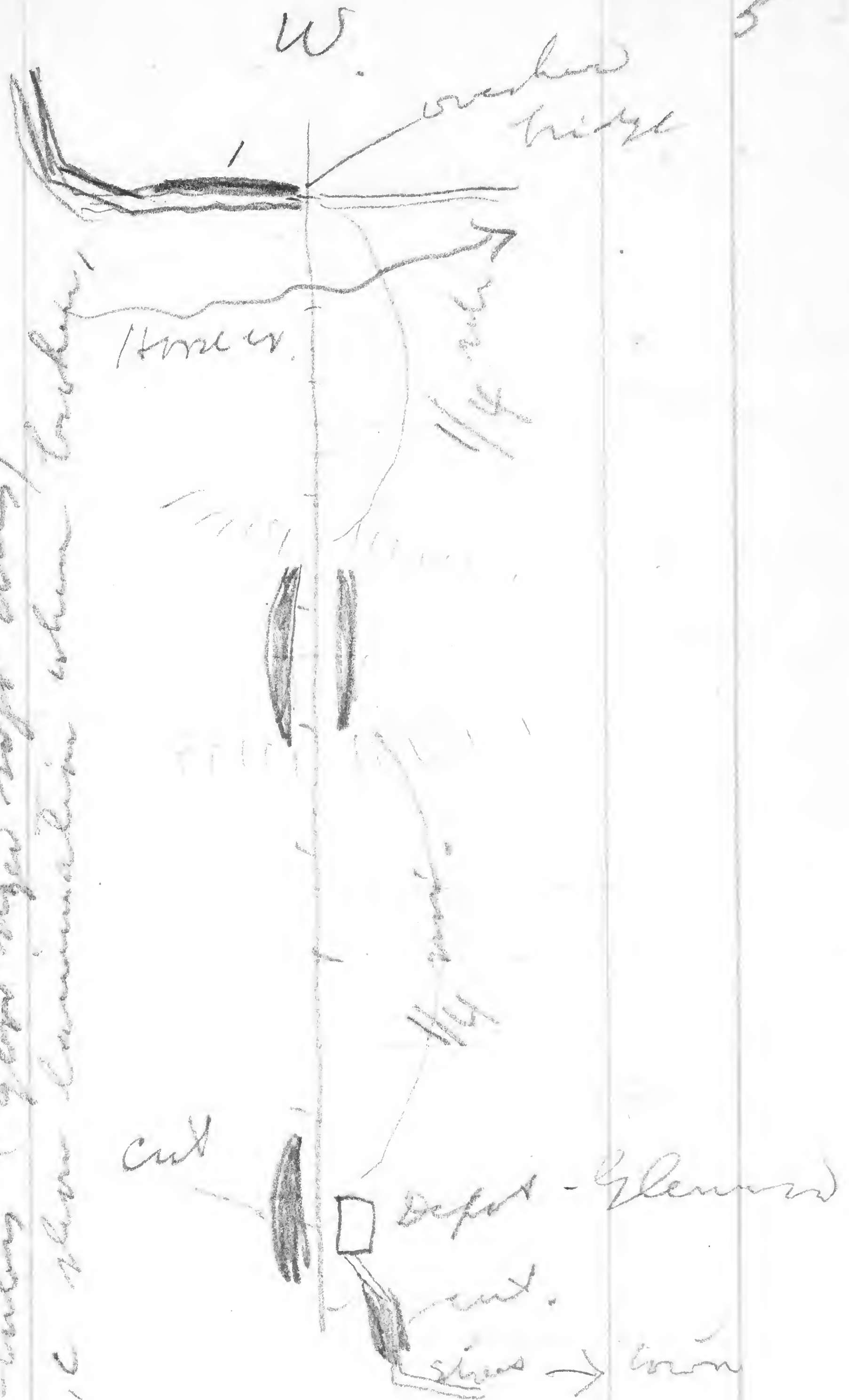


1st cut W. of depot

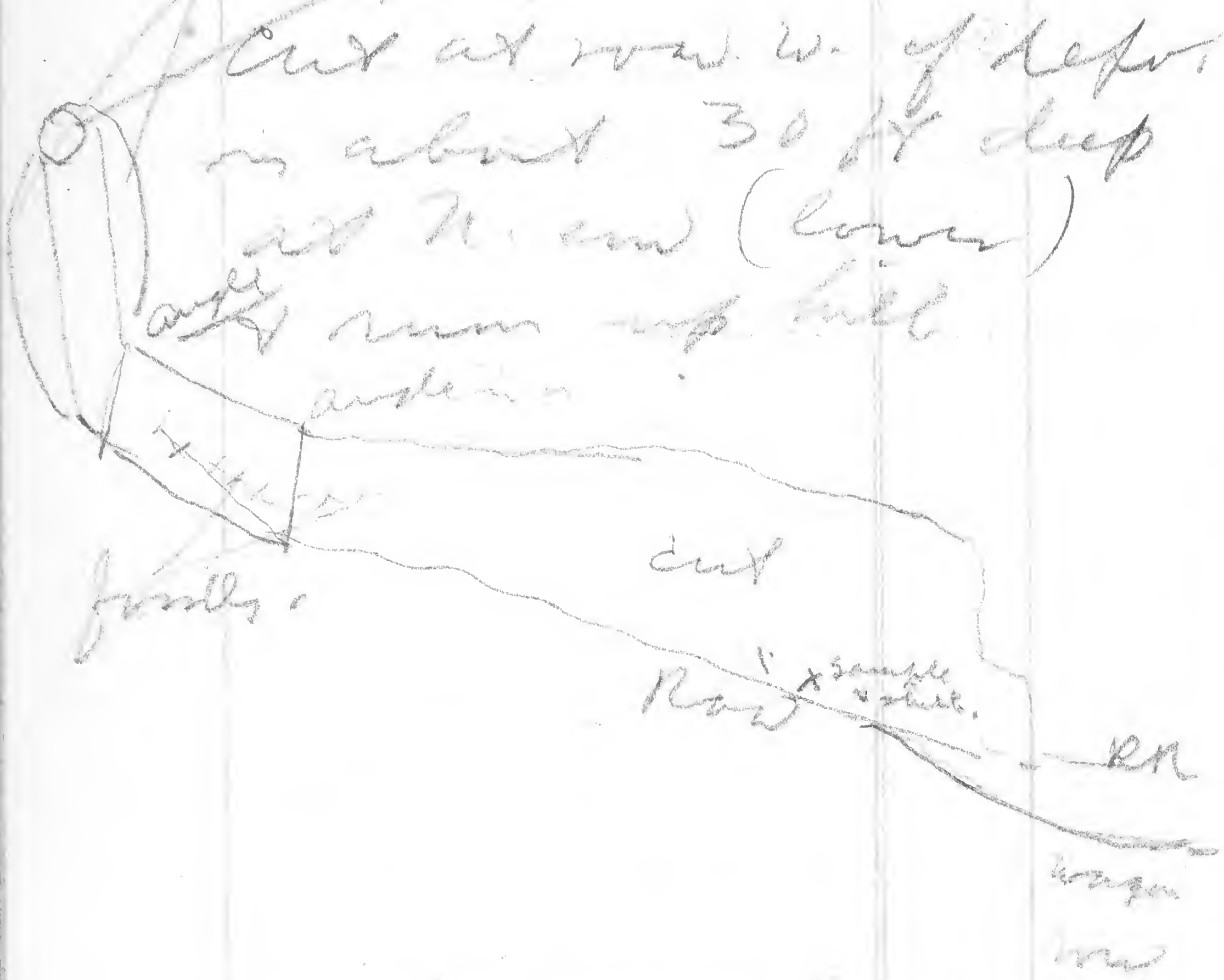


At E. end it shows layers yellow, reddish above, at a, b is a mass of bluish loam which disappears as far as I could make out toward the west. At W. end the loam is like in cut off depot, & has shells, nodules, etc. c. is again irregularly yellow, or brown from iron, & appears to be more strongly laminated as is by water.

The yellow loam above & below b. has thin horizontal bands & streaks. (By certain iron nodules) (good sized soft ones) a, b, c show lamination when broken.



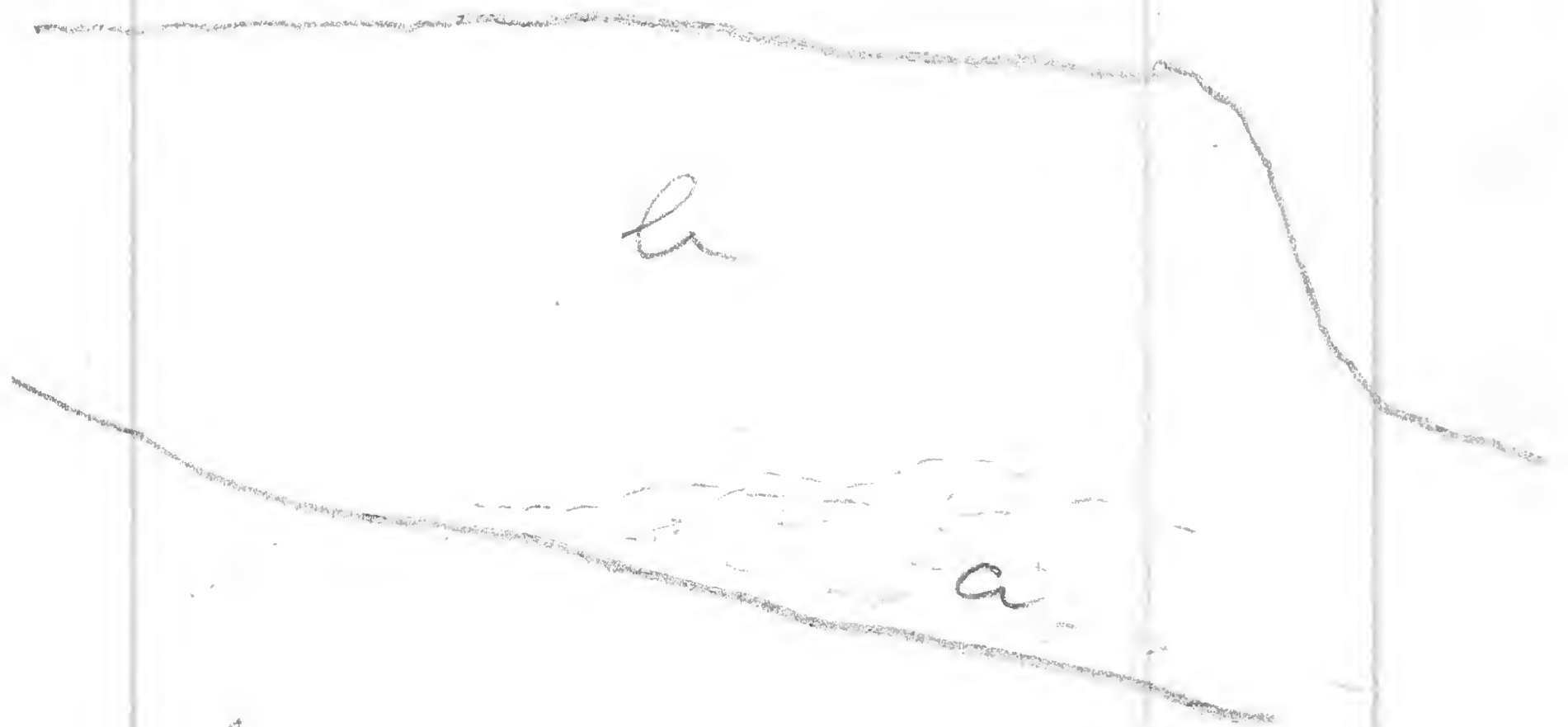
6
 few or no fossils
 top of hill



Few fossils are found in
 cut strata.
 This is Udden, Kelly
 or exposure. Dean
 says it is Horse creek.



Cut shows almost no
 fossils - none above.



Lower end of cut 1 on
 road W. of depot
 (a is darker colored, as
 if old soil
 b is yellow loam.
~~Both show fossils~~

Going N.E. from
 Glenwood -
 1st big cut just
 S.E. from Glenwood
 (The house is 100 yards
 N.E. of S.E. end of
 cut.)
 cut about 60 ft
 deep.

W. side



a = loess - few fragments
 of fossils, some nodules
 showing laminations
 when broken. It is
 darker (brown) than
 normal loess.
 Grades? below it
 b. which is darker &
 like very lower loess
 in Horse creek cuts
 this runs about 6-10 ft.
 c. drifts with some
 medium sized
 mostly from c. boulders
 (c) is gravelly tan with
 fields more like
 joint clay below

The drift shows only
 from 1/2 to 1/3 or less of
 the cut, & about 3
 ft is exposed at deepest.

A line of boulders
 partly marks upper
 part on W. side cut.

A great many
 irregular lime nodules
 show in drift on
 E. side, not quite
 to its top.

The loam is thicker
 & more surface (a
 few ft) again
 shows redder.

The ^{cut} cut (smaller) is
 about 15 ft deep &
 of yellow loam, except
 slightly reddish material
 a few lime nodules.
 Shells scattered more
 or less, but chiefly
 in lower third
 of cut, except at
 end.

Another smaller cut
 shows yellow loam
 nodules & a few
 fragments of shells.
 The larger cut before
 coming to cross road
 shows deep yellow
 loam, lime & I noticed
 a few fragments of
 shells (Succinea) &

The 2nd cut SW. of Balfour is 15

ft deep.

Upper 2-3 ft. is yellow loess, with scattered fossils.

It changes below not very abruptly into bluish loess, with many iron bands in upper part.

Lower (or light gray, usual Kansan) bluish loess in lower (or light gray, usual Kansan)

The yellow loess & blue loess both have nodules. Fossils are rather abundant.

in yellow loess & a few fragments seemingly by grinding were seen in lower blue loess (its upper streaked part)

✓ 18-17' loess N.E. of Balfour

✓ 23 - loess ? Balfour

✓ 24 - " " " " N. side

	Remains - several ft
85 ft	Loess
	oxidized iron
	1-2 ft
	Red loess!
	on S. side blue & chocolate joint
	clay show - blue
	1 ft or less - chocolate w. set.

Grind big out

1/3

- Soil & loam yellow 5/7
- Blue loam 5-6/7
- Chocolate loam ^{pink} 5-6/7
- Red loam ^{grey} 5-6/7

1/3

Lake

1/3

—

Two small cuts
beyond B alford
showed loess with
many nodules.
Another larger cut.
Two more big cuts,
one very large -
The latter shows
red loess underneath -
Several ft. of loess
a small cut beyond
road shows large
boulders. Then a
large cut with
loess red loess
exposed below.
Another cut shows
drift thick, 4 or 5
cut & loess thin, not
over 8 or 10 ft.

Then broad valley to
Madison.
There is less timber
along river. There
was also timber in
valleys & pockets all
the way from
Glenwood.

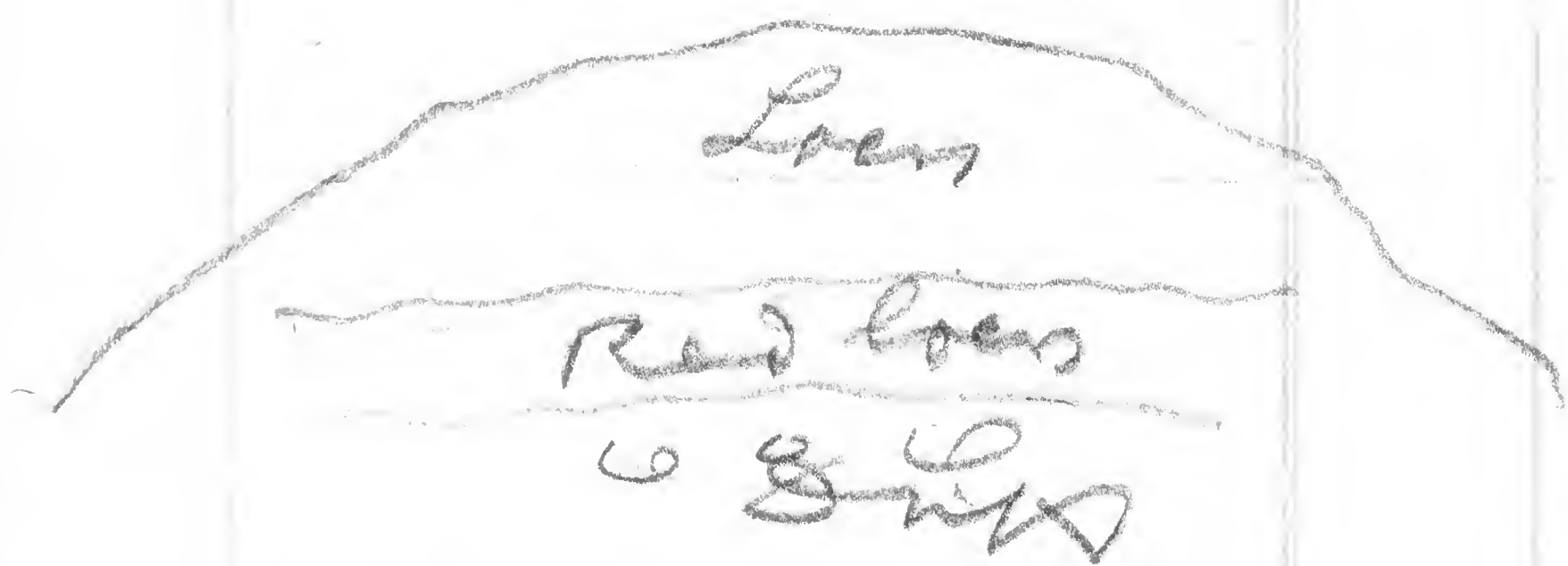
Cut opposite depot
shows loess & several
feet of red loess
below.

Cut is quite large.

Beyond Madison
the country becomes
more greatly rolling.

Second big cut
& shows loess, a
strongly oxidized red
narrow layer & then drift
road

Beyond this cut is
a row of fairly
valleys - scrubby
next cut (quite large)



Red loess is various
drift very distinct - red
These broad bottoms
of the Richman lotna,
at least 2 mi wide

No cuts to Emerson,

A cut 2 mi. beyond
Emerson shows drift
almost to top, then

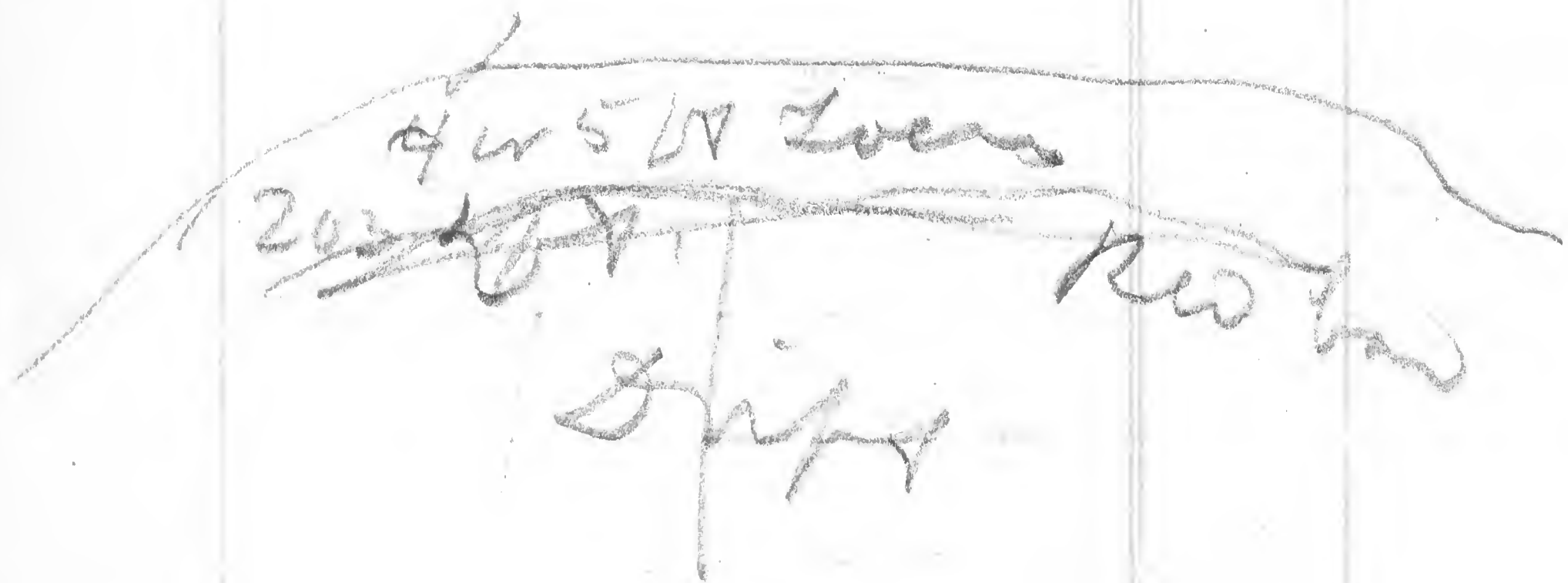
is loess on highest
part, but it seems
to run out eastward.
Next cut shows
red drift, then
what appear to
be blue & loess
& yellow loess on
top.

A couple of cuts
E. show red layer
(drift?) in lower
half of cut &
loess above.

This is just before
reaching McPherson
(west of it).

A big cut beyond McPherson
(near depot - E. of it)
shows drift at base &

red loam & yellow
 loam above
 A short distance
 B - yellow loam $\frac{1}{3}$
 Red loam - $\frac{1}{3}$
 Drift $\frac{1}{3}$
 very level



The two upper
 layers become still
 smaller in adjoining
 out, East.
 Red band 2 or 3 ft
 wide & very top

Bottom land
 Above Red Oak
 small out - all
 drift. This is
 just after crossing
 stream
 near -
 Loam
 Red band
 Drift
 Still narrow, about
 same - stumped
 Broad bottom

Red Oak Aug, 30-06
cut S. of depot.

a

b

c

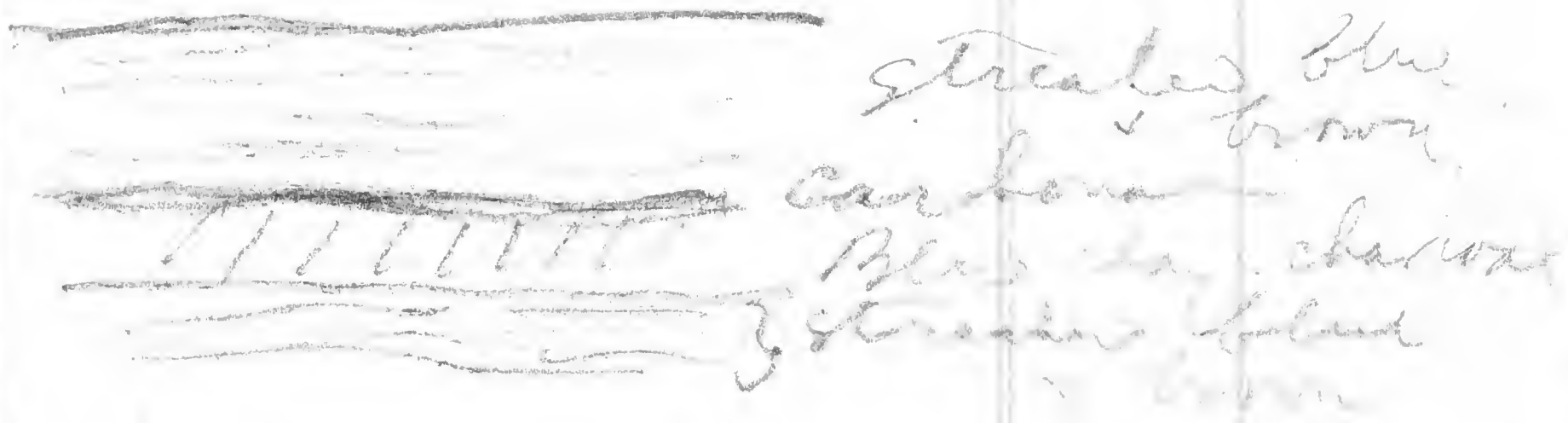
d

e

f

g

h



brownish (clay-like)
but with pebbles



a. the usual crumbling upper
residual loam + soil -
2-3 ft upper

b. foot dark, - soil
A yellow loam with
lime nodules black
spots + streaks, +
horizontal iron lines
+ clardings.

This merges below, within
1/2 a foot into c. 3-4 ft.

c. A layer of blue loam.
like streaks of brown, -
like old soil or humus
It is horizontally
laminated + stratified
& may correspond to
blue loam, but is
more likely a part
of next, belongs to

1-2 ft.

old drift soil.

d. an irregular blue clay layer, breaking into horizontal plates, 4-6 in thick, but mixed with layers of brown (dark) carbonaceous stuff, which also form a distinct layer between c & d. 2-4 in thick. d contains charcoal. It is similar to c, or rather a continuation of d. brownish, with streaks of blue & brown. d & e contain pebbles.

f. is a rather dark brown loam-like stuff, not laminated & with pebbles, some of them 1 in in diam. 1-2 ft thick

d & e - 1-2 ft.

e

g. ^{by} about 10 ft of yellow, brown drift with pebbles & few small boulders also thin nodules - irregular. g. is simply the upper ^{part} of original ^{loam} part 1 or 2 ft. thick.

Take samples of b, d, & f.

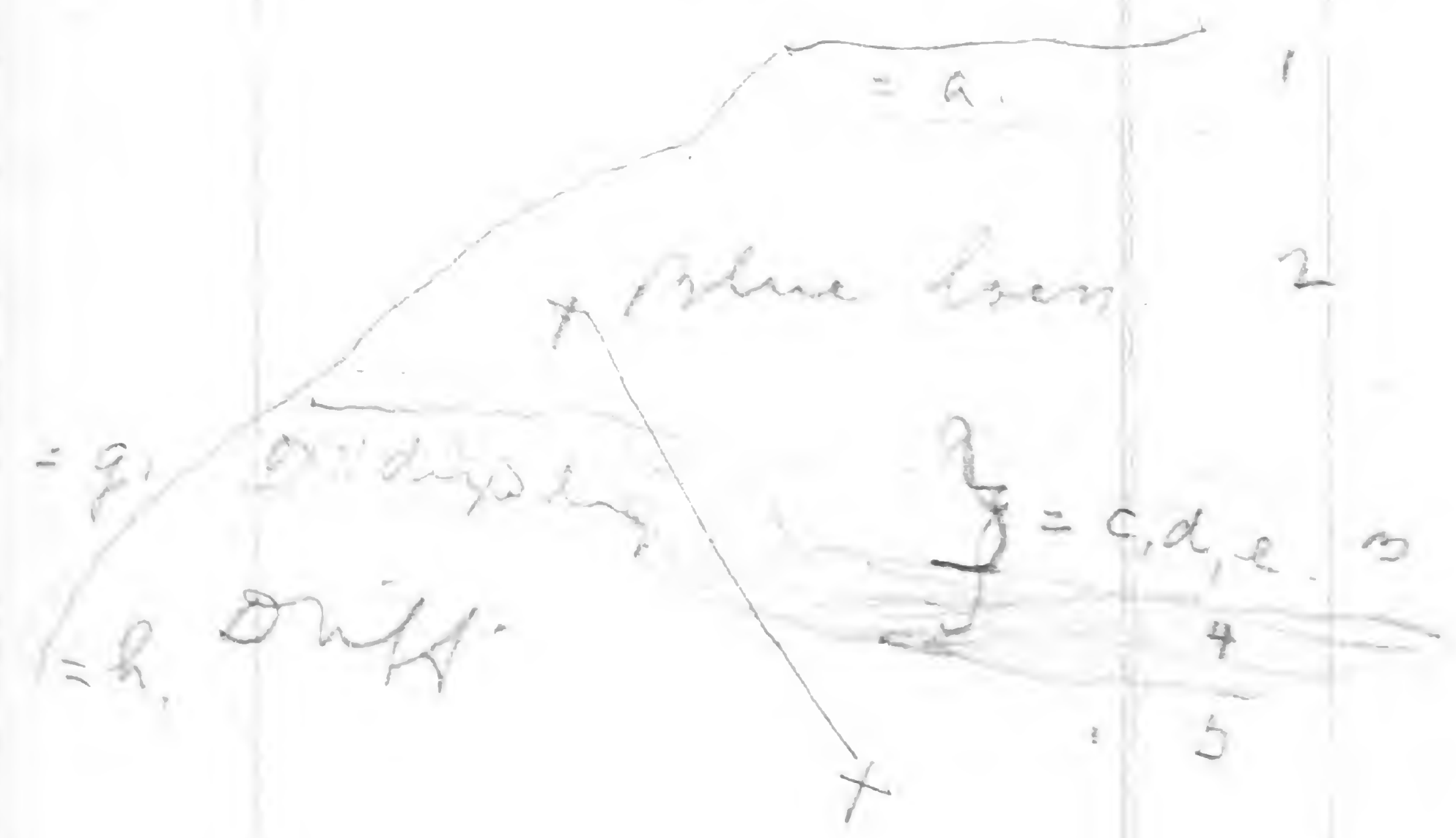
c, d & e. look as if laid down in water, c shading up into lower.

✓ R. ✓ 5 photos

cut. S. of depot



cut. E. of depot - Rev Oak.



1- Dark soil + loose loam
 2 or 3 ft. This may
 correspond to a + b
 of 12 cut -

It becomes reddish
 below.

2- Is blue loam with
 iron horizontal streaks
 no fossils, no nodules
 some iron rust tubes

3- Is irregular + very
 unlike 2, but
 number, + shading
 horizontally into

about 2/4 4-5 ft
~~4-5 ft~~
 about 2/4 4-5 ft

4- about along + R
 It appears as if
 there had been a
 pond here, with
 xx the beach, + B
 a mud deposit.

4 is strongly and dips down
to 6 ft. & bleeds
with drift. It is
drift, with pebbles
sh.

5. Is like drift in
1st cut.

Took sample of (2)
at about middle

3 has darker sand, than
bluish. The lower
evidently corresponds
to C.D.C. in 1st
cut.

This cut is toward E. end of
long cut, east of depot, &
is transverse to general
cut. Most of cut is overgrown.

3 dips down decidedly
& was probably bottom
of the bank.
The stuff is stratified
The larger boulders are
drift and red.
Largest 5 or 6 in.



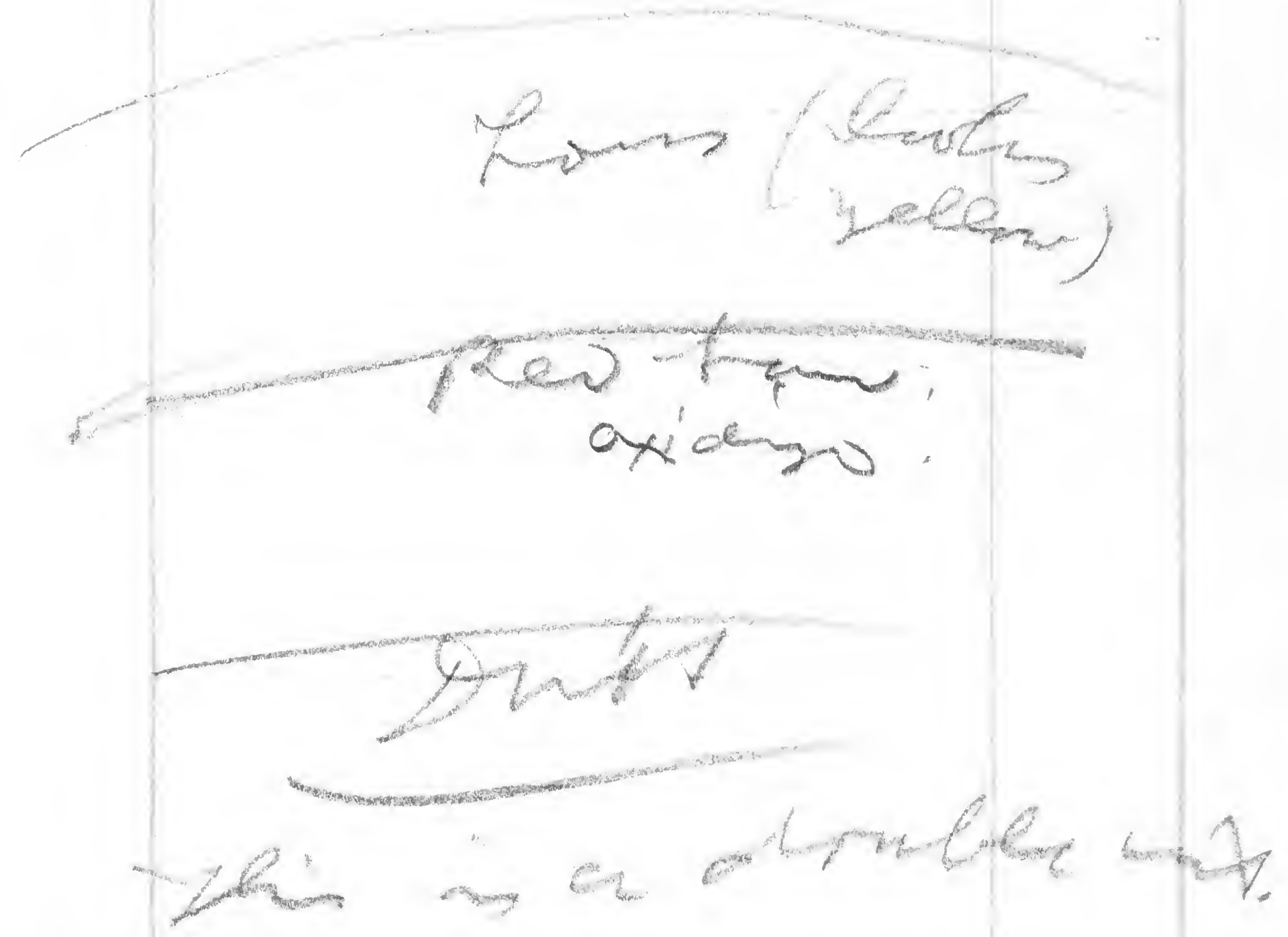
Plates 13 & 14 =

Or this -
cut of Red Oak.

The same long cut
E. of depot, at West
end, N. side, shows
drift & yellow
loam above it & or
a layer like of it
cut 9.

Return to Malvern
from Red Oak - 8/30 '06

Beyond McPherson (depot)
Road - just beyond.
150 yd - cut -



1200 ft another
cut, about the
drift.

Road ~~X~~

a hill beyond
Road a big cut
slumped - shows
layers about
depth below

1600 ft - small cut
550 " large "
Dumper.

At 4000 ft road,
just before reaching
depot at Emerson.
(In each case measured
between cuts, &
length of cut not
taken into account.)

The wagon road runs parallel
to RR. from crossing to depot at

Beyond Emerson - to
Harlow no cuts
worth mentioning

~~5500~~ river

5300 + 500

^{2nd cut} 1800 + 800 +

big cut
over looks blind
& through
red rock

+ 4 Road

+ 2500 to cut

1700 long cut

Depot Harlow

Cut opp. depot
at Malvern

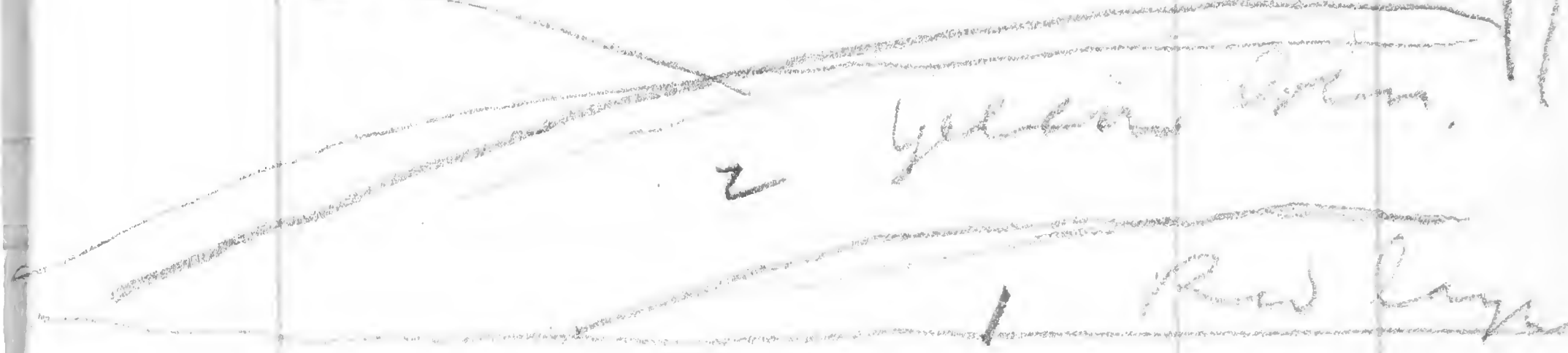
is highest east
of depot.

Below, at the
highest place,
there is about 10
ft of red loam &
15 ft. of yellow
loam - latter
like to an east
S. of depot at
Red Oak.

Toward west the
red layer becomes
more like joint
clay & thin grains
of sand can be
seen.

Took samples of both

overhead 35
order above.



Took samples of 1 & 2

The loam thin out
westward somewhat
It contains a few
round nodules.
The line is ~~not~~
sharp between 1
& 2, but change
is abrupt.

Malvern to
Shenandoah
per Wabash RR
Beyond Malvern there
is a big cut, but
overgrown.

Smaller cuts beyond
Strahan show drift.
Mostly overgrown.

There seems to be
loam on top in most
of them.

Some miles out
there is a big loose
cut, - nodules.

Another rather large
one is a short distance
beyond and near
Solomon.

Just beyond Station
a large cut shows
loam & lower part
has red stuff.
Good sized cuts beyond
Quincy about
same - loam etc.

Road from Summit
to Hamburg
at 1 - Red uppermost
layer of drift, somewhat
loamy above comes
almost to surface
there is a little
loamy soil above
it. Gravel
appears in shallow
cuts in ditches

Looked for shells (renew)
at (2) in a grove of
Cove oak, by flowing
& stream. but
found none.
2 is rather low, but not
subject to overflow.

A 3 collected. Lichen
on old fence
at 4. Blue loam is
exposed on lower part
of slope W. of creek
(Streamlet) to road.
Near top of hill there
is abundant yellow
loam on top of
blue loam
at 5. top of hill -
blue loam comes
to top - saw
nothing else
at 6 almost no yellow
loam - blue loam
exposed.

Reached Hamburg 7¹⁵ PM

Put up at Jackson Hotel

Aug. 31 1906

Left for Nebraska City

at 8¹⁵ am.

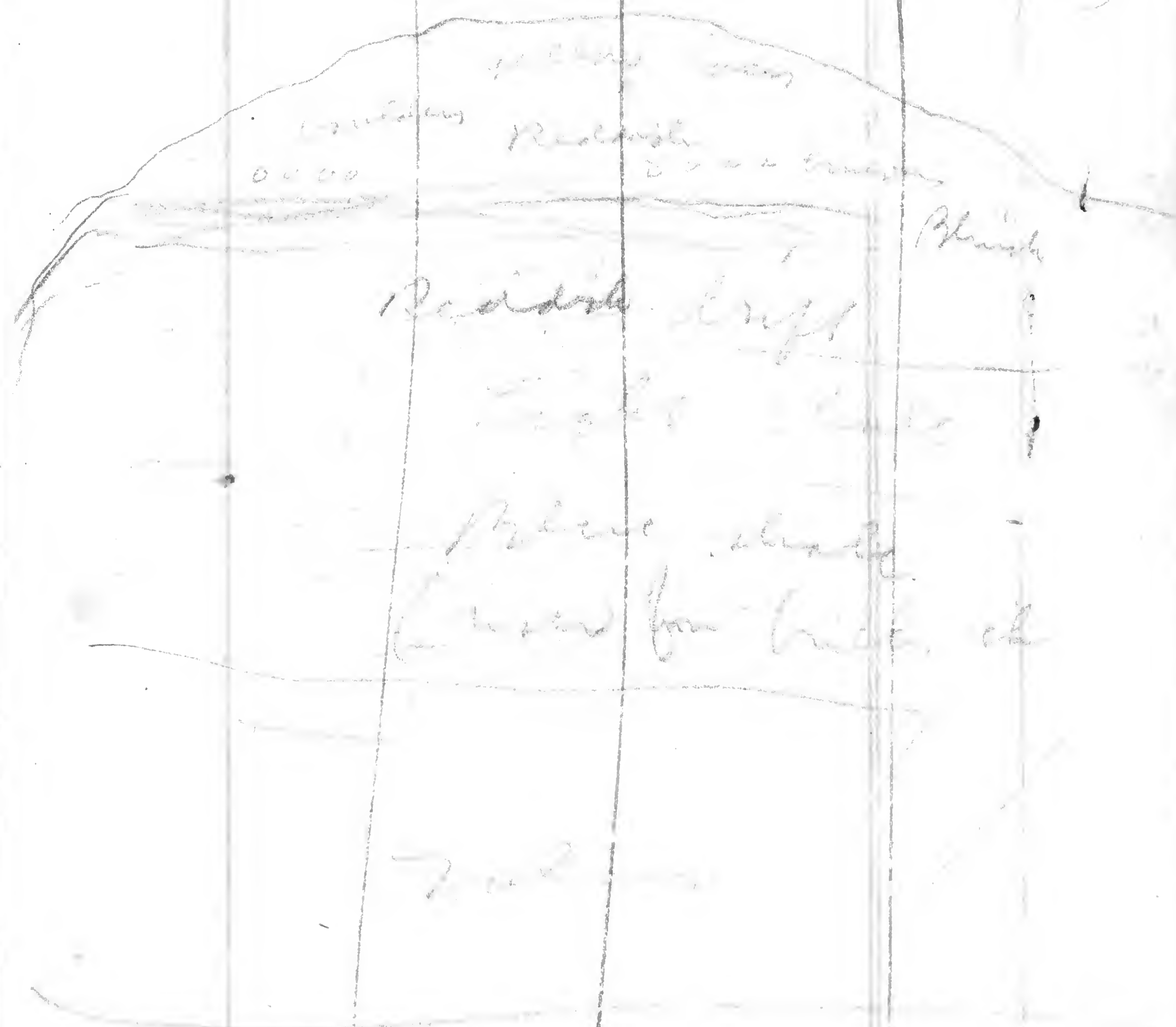
Put up at Watson Hotel.

1.

Cut 1. At cor. Main & Center Ave,
E. side of Center Ave &
S. of Main. The street
cuts about ~~27 ft~~
into light yellow loess
with fine nodules, isomorphous
in lines. Not too full.

3.

Cut 2. Below RR bridge bluff where
brick co. gets shale
as nearly as I could make
out from below, (top
of section is in rubble).



42

✓ x Views looking up river
 ✓ x on Red. Cy. side from
 near S. end of 1934
 RR. bridge
 shows base



43

$\frac{2}{2} =$ Carbon cut



1. coarse arenaceous shale
2. fine grain light color
normal loess.
3. Normal loess.
fine and very friable
4. normal section loess
5. normally stratified loess
with band of pebbles etc.
6. Normal loess blending
with 4 at west end

4. Is usual yellow
"lobular" loam, sand
about 4 ft

line between 3 & 4 is
not sharp.

3. Is a blue loam with
large iron tubes which
extend also into shale
below. The upper
part near 4 is darker
colored.

The line between 3 & 1
to left is sharp.
Lower part of 3 breaks
into vertical plates
nearly parallel to face
of bluff, just like 1.
Is this due to shaly?
It contains charcoal

rocks & a few fine
nodules. No fossils.
The root tubes are
vertical, & I trace
some through 3 & 1.

4 runs below into a
much chocolate color
layer 1 ft thick.

as in many places has
limestone plates, also
red iron band.

The lower part of 4
certainly not loam
& upper part may
or may not be.
It all crumbles
into angular pieces.

✓ Photo A. taken in
X-7 of Calson unit

✓ B. gives view of strata
cut, with rolling
mosses run down 20 ft &
are well washed.
Calson part of unit
in far part among
trees

As on previous page it
is a compact yellow
blue at base, with
with some nodules,
no fossils.

I took sample at
W. end of exposure
from this. It
shows up from
new bank

4
cut 4

just north of M.D. RR
deposit there is a bank
about 15 ft. high of
which over half
is "new bank" & in
other part is yellow
fossiliferous loam.
It contains few
rounded nodules.
It is typical yellow
loam with a few
irregular iron streaks
& occasional black dots

See slides & samples
Fossils seem to be most
abundant in the lower
half.

This cut from the
Main road, which is
only a few rods away



5

cut 5 is about on level
with RR near & extending
to top of hill.
About half way up the
hill yellow loam (pale)
streambed with blue,
& with a few nodules
& a few shells.

See above

It is like seen in cut
4, but is more strongly
laminated.
The shelly part
is at lower end
(main town)

was shocked to hear
of Mrs. Rosewater's
death.

I called on him only
last Sunday. Her
appearance time, - that
is all.

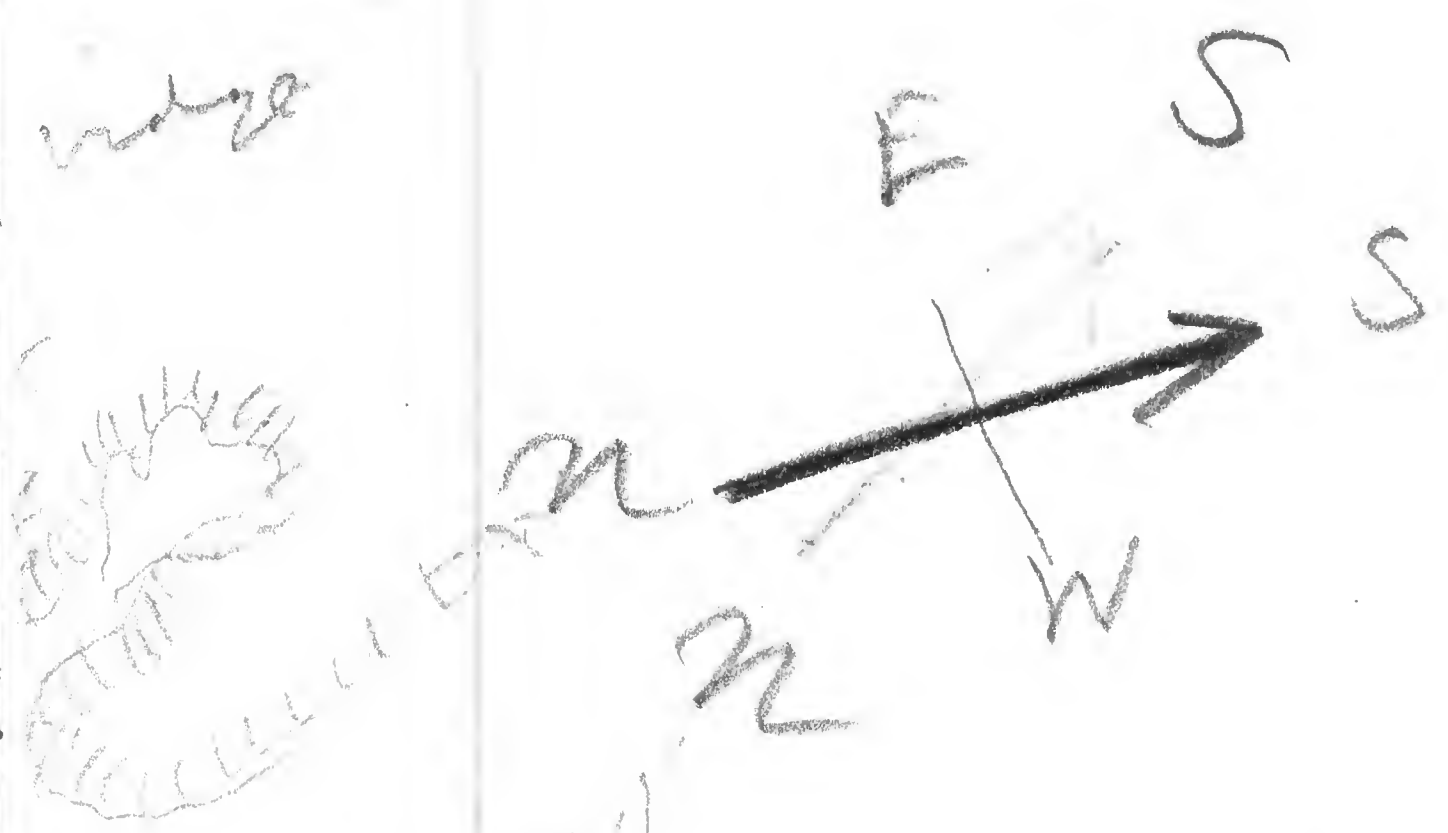
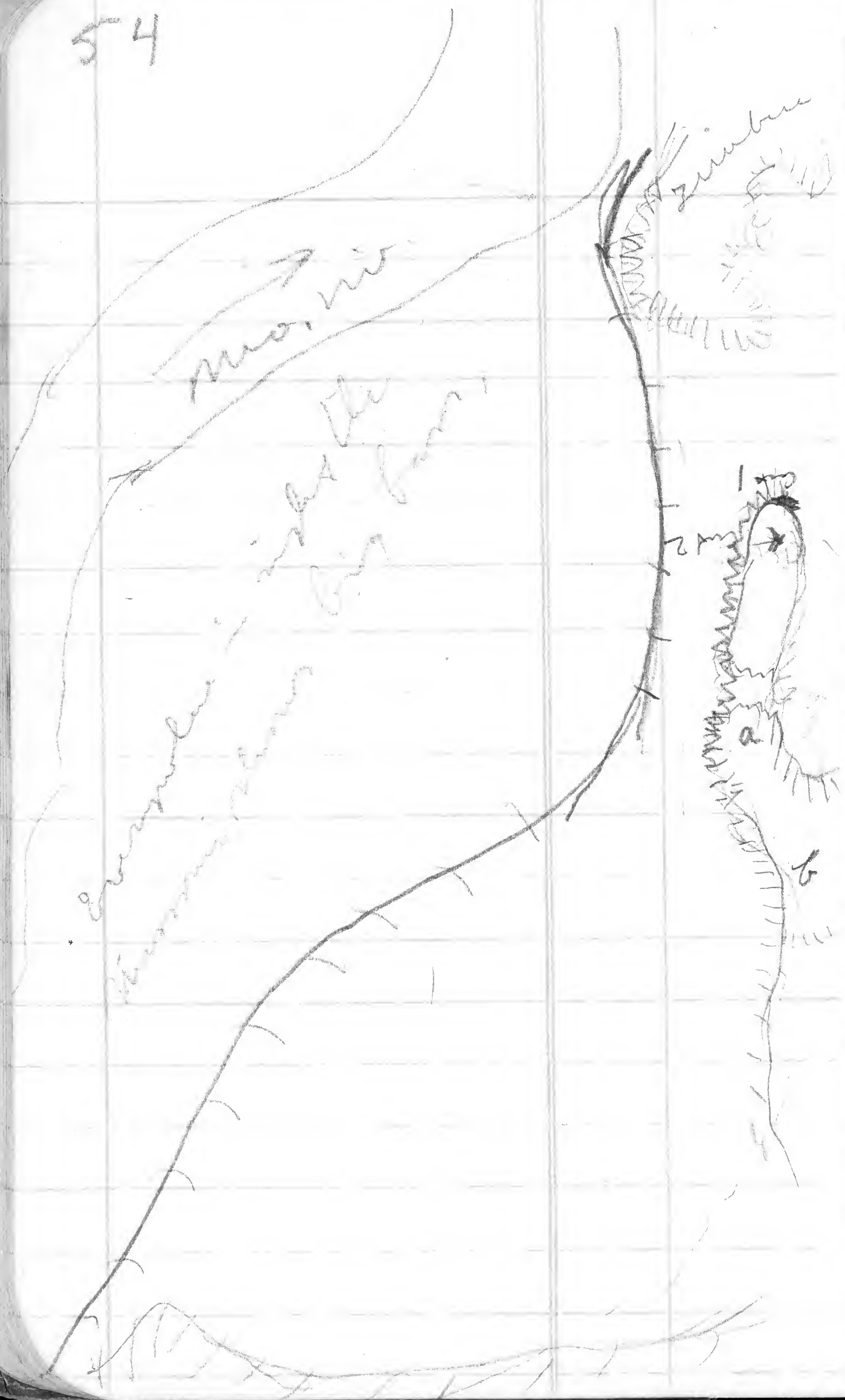
Sept. 1 - 1906
Started for Perm at
8:45 am.

The 1st cut in Perm is
a block S. & 1 blk W.
of depot. It is at base
(end) of ridge on N.
side of road. It
appears like a darkish
violet. Has nodules &
some shales, mostly Heliconite.

Several more obtained
by digging.

See samples.

Also took a sample
from near top of same
ridge, - ft. above
valley. This is
cut 2 - a small exposure
near end of top of ridge
in fine light yellow
powdery loam with
a few nodules.
I also saw a few
fragments of shales.



The ridge (cuts 1+2) reminds one of the Hawkeye ridge but is not as high nor rugged.

There is no black soil on this ridge, nor in any or similar ridges elsewhere.

Woody plants on bluffs
as seen here

- | | |
|-------------------------|------------------------------------|
| Cottonwood | Box Elder |
| Sycamore | Hazel |
| Ambrosia artemisiifolia | Basswood |
| Bittersweet | Osage |
| Cornus canadensis | Wild Grape |
| Bur oak | Catalpa |
| Honey Locust | Red elm |
| Quercus velutina | |
| Dalrymplea (rough) | |
| Bittersweet | Salix amygdaloides
& longicarpa |
| Wild Plum | |

on lower ground

- | | |
|----------------------------|------------|
| walnut | an elm |
| mulberry | soft maple |
| Willow (arroyo or wisnman) | |
- a cottonwood grove on flat NW
of depot shows many dead trees in clump
of grove.

The bluffs facing the
main valley are all very
abrupt, as if the river
had recently been
undermining.

On the higher part of the
ridge, at (a) I found
a heap of coarse sand
& gravel. Used in
making of a small
water reservoir on
ridge.

Suppose this is
his cover. later?
It is quite windy today
(wind E. of S) &
although it has recently
rained (yesterday) there is
much dust in the air.

Perm. 9/1906

Photo 23 - Looking S.E.

across river from top of
ridge

24 - looking SW into
an inner timbered valley.

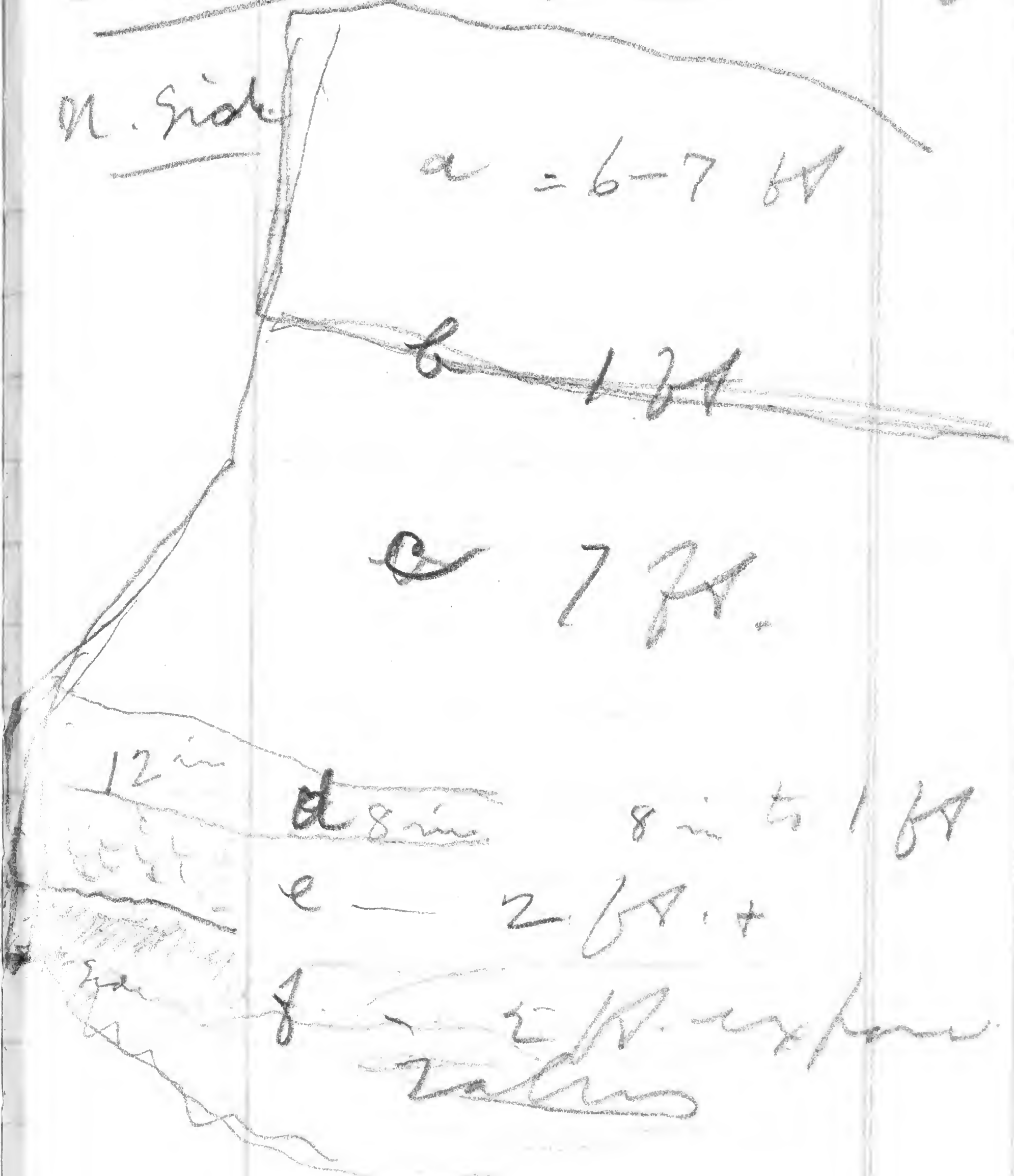
The ridge at highest part
is about 130 ft. above
RR. on bottom.

cut 2 is about 110 ft
and cut 1 (at base) about
2 ft. above RR. It
is about 8-9 ft deep.

cut 3 is 2 blocks S of
depot, part way up
hill. Its base is about
30 ft. above the RR
depot.

cut 3

N. side



a = light yellow loess -

b = iron band rather sharp
& about 1 ft brown, in
places a mass of laminated
bands.

c = blue loess - with

large iron tubules, some
of which pass through b
into c. They are
especially abundant
in the lower half.

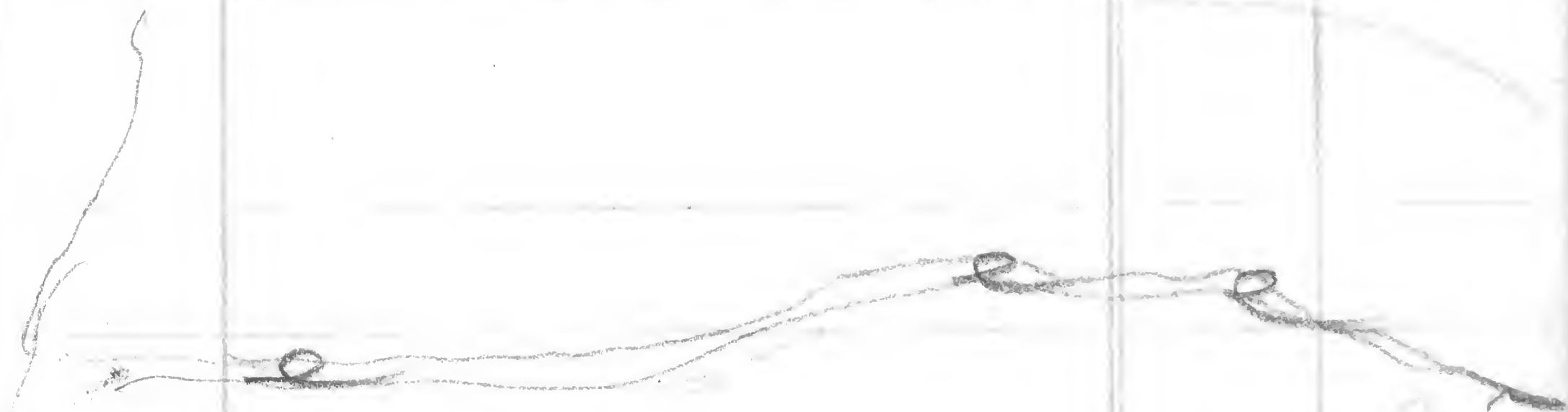
c is about 7 ft. deep
It is scantily fossiliferous
in upper part. The
shells being very
fragile.

d is a dark bluish
layer like that observed
below blue silt in
Calvin's exposure,
The iron tubules run
into it.

e is a very red clayey
& gravelly layer &

f is dark blue black gravelly
drift.

The same structure shown
to right for 100 ft
along shallow cut
(can be dry pit)
and 3

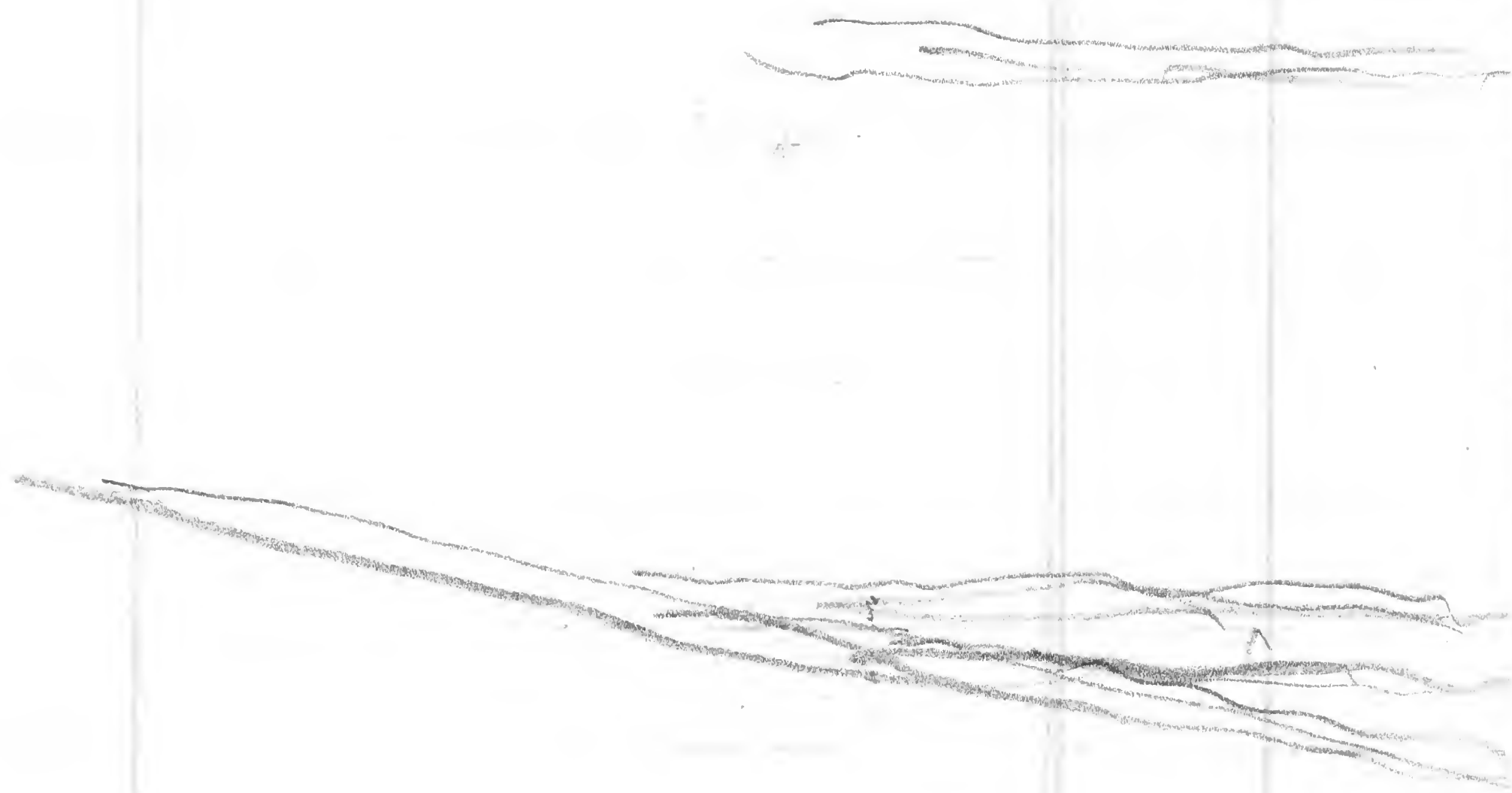


a shows down to horizon
right side of
cut,

Two samples of
c - 1 ft + below top &
1 ft above bottom

a -

cut 3 - E. side



d + e are almost horizontal, if anything dipping back they are exposed for over 50 ft.

a thin out to left

d is good clay - like water sand stuff - bluish shaly above & with brown iron



below - a sort of chocolate

c. contains large
 nodules - not rare
a has a few
 fragments of shells.
 I recognized Murex
mult., but it
 crumbled.

- ✓ Photos 31 & 32
- ✓ N. side of cut 3.
- ✓ 13 & 14 - E. side of cut 3

On E. side, toward S. end
 of cut 3, the layer
 'd' is thin, its part
 is various, with yellow &
 light blue. This,
 however, hardly,
 In this upper part I
 found several fragments

of shells & a few whole
 ones. Pyram. albidula
 ↓ Helium ornata
 This is in a little
 depression of the
 red layer & ✓
 marker - photos 17 & 18 ✓



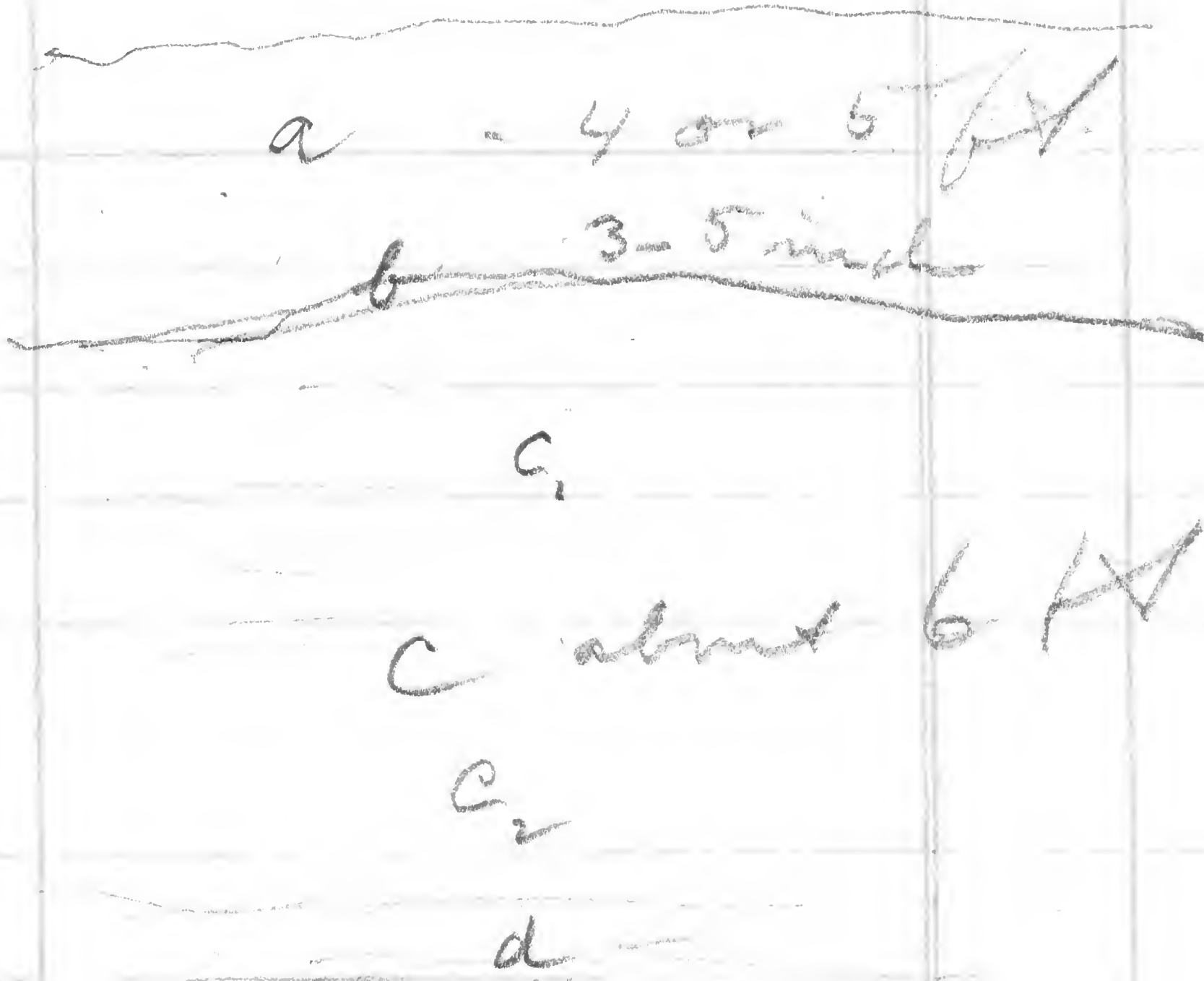
Just above d ~~the~~
 fragments of shells
 appear throughout
 the blue layer, even
 to base, & blend
 with d.

~~90~~
~~210~~
205
2

Cut 4
4 blocks S. of block
W. from depot
Runs up hill from
main str. town
W. Fossils very
plentiful in a
yellow loam, often
horizontally lined &
banded with iron.
On S. side of str.
more uniform &
some of it darkish,
like soil

This is halfway up
the hill & its top is
about 20 ft above
street

cut 4



values

a - A loam, slightly
brownish, with black
spots. Same as
b is a hard iron
crust with iron
part taken projecting
below, also a hard
part
c Loess - the upper part
(c1) is finely banded &
lined with iron, &

is especially fossiliferous
The lower is darker
& contains some
fossils.

There are nodules
more or less throughout

d Below, c runs into
d, which is again
a waxy joint clay
(like my chocolate
band.)

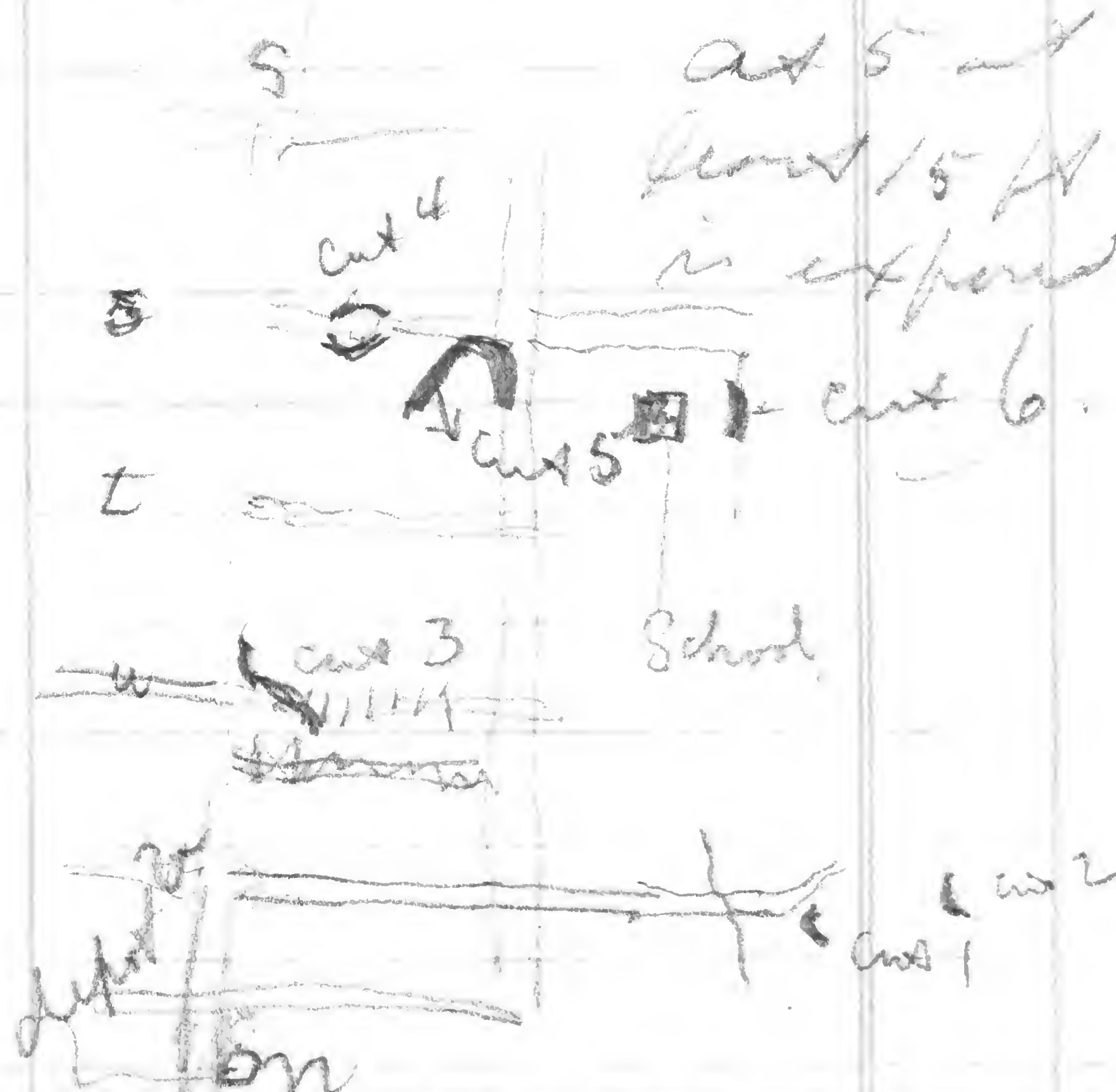
The iron band seems
to run slightly upward
into hill.

Found lime nodules
which had formed
around roots in
fossiliferous layer.

The fossils are all
chiefly from c, &

upper part of c
Further W, stream top
of hill is an exposure
of light yellow (light)
loam, with nodules &
a few fragments of
fossils. This is

undoubtedly later than
c of the ~~free~~ cut
cut 7 4, as that dips west



cut 6 is at top of
 hill at school house
 It is about 15 ft
 deep, in front
 light yellow loess
 which shows nodules
 & lamination almost
 horizontal on
 weathered surface
 It follows contour
 somewhat
 fossils are not
 abundant, but
 scattered all
 through - few.

Loess in cut 6 is like
 that in 5.
 S marked shells, etc
 from cut 4 as

from yellow loess.
 While loess is yellow
 more or less, the
 layers seem to be
 same as blue loess
 of cut 3.
 It is c.

Base of cut 5 is
 65 ft. below top of
 cut 6.

Shell layers in cut
 4 is about 20 ft
 lower than base of
 cut 5.

Strat below cut 4 is
 100 ft. lower than top
 of cut 6.

How

Cut 7 is 2 by block
 3. of cut 4 street
 on top of hill off
 Christchurch. It is

bluish brown,
 quite compact,
 with iron tubules
 & some nodules
 no fossils

Resembles unlaminated
 C in cut 4.

see samples taken
 3 ft from top.

Cut 7 is still
 probably 40 ft
 lower than top
 of ridge to west.

(r) (cut 7) is 60 ft
 above S.

From S to t nearly
 level.

Then drop from
 t to u about 6 ft
 & from u to depot 6 ft

From u to v drop
 about 15 ft.

From v to depot drop
 about 6 ft.

74



2

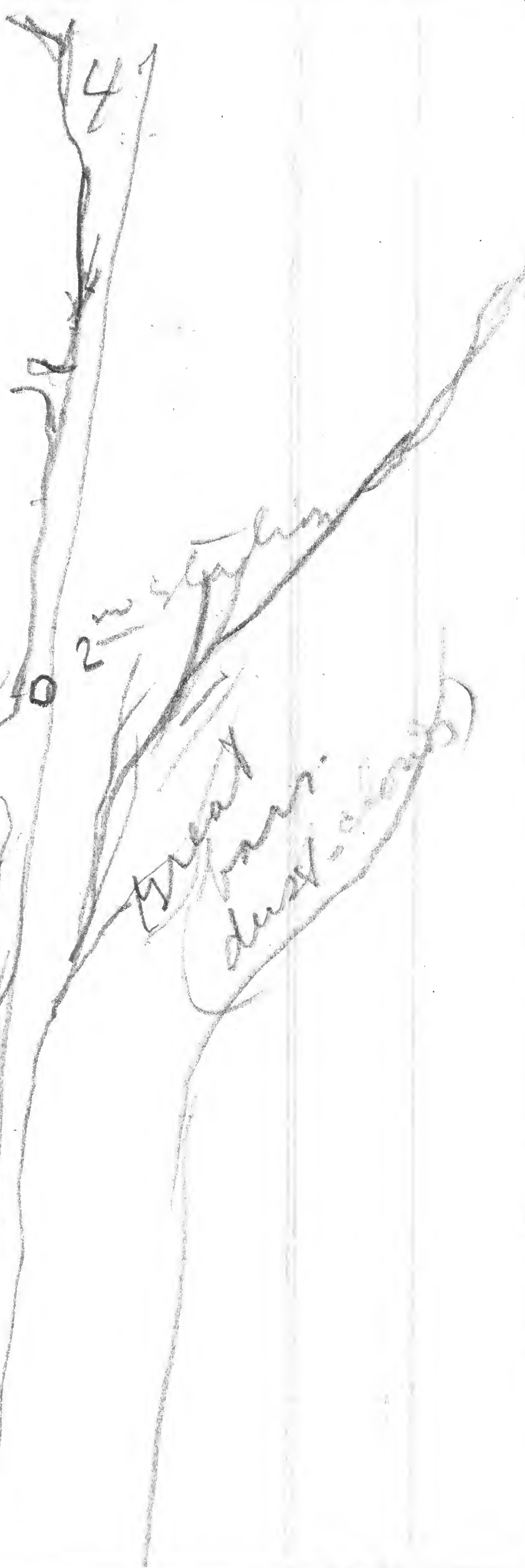
75



3

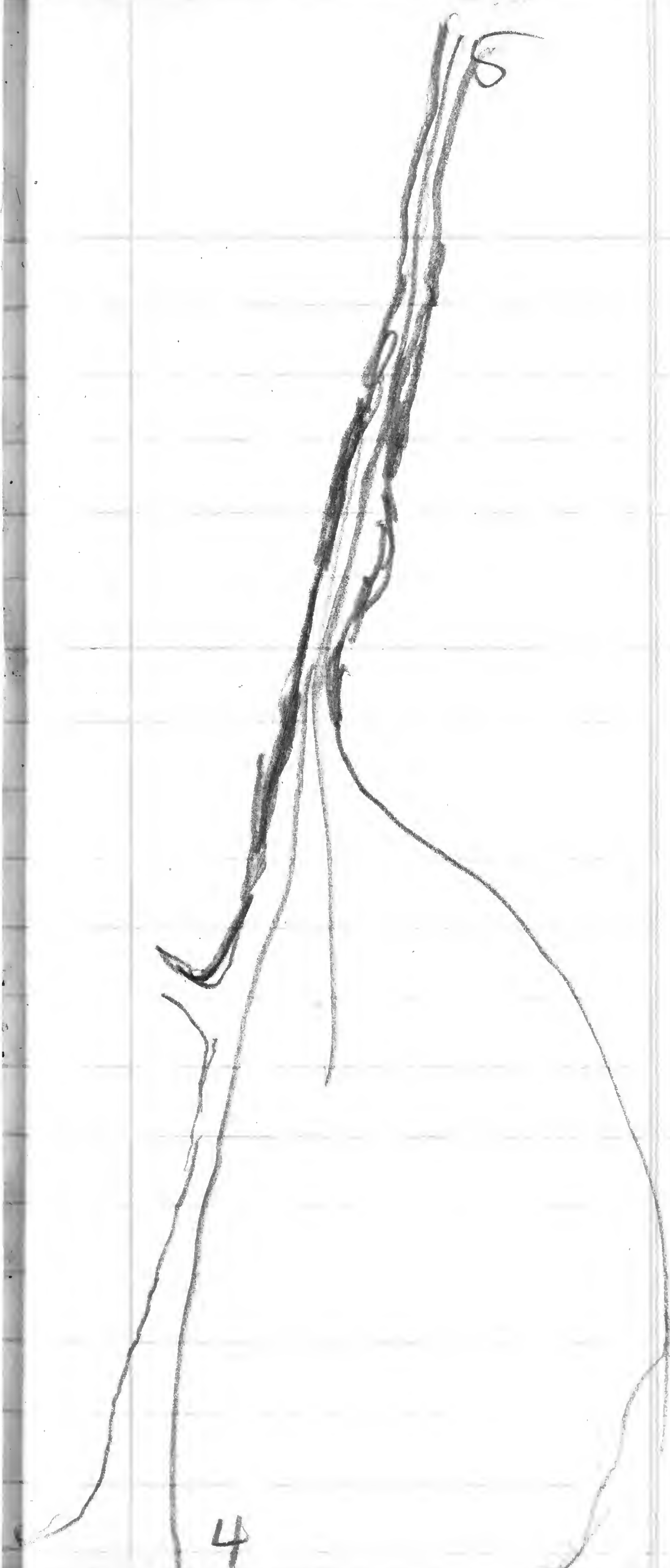
2

2



Just before
 reaching
 the (at B)
 bank above
 very no
 longer like
 at previous
 also been

3



4

78

6

mit
D

pen
5
11/10/52

79

Sept 2 - Went out to mine on Walnut creek. Found no water shells by dredging or blowing. Found some low shells under logs & timber.

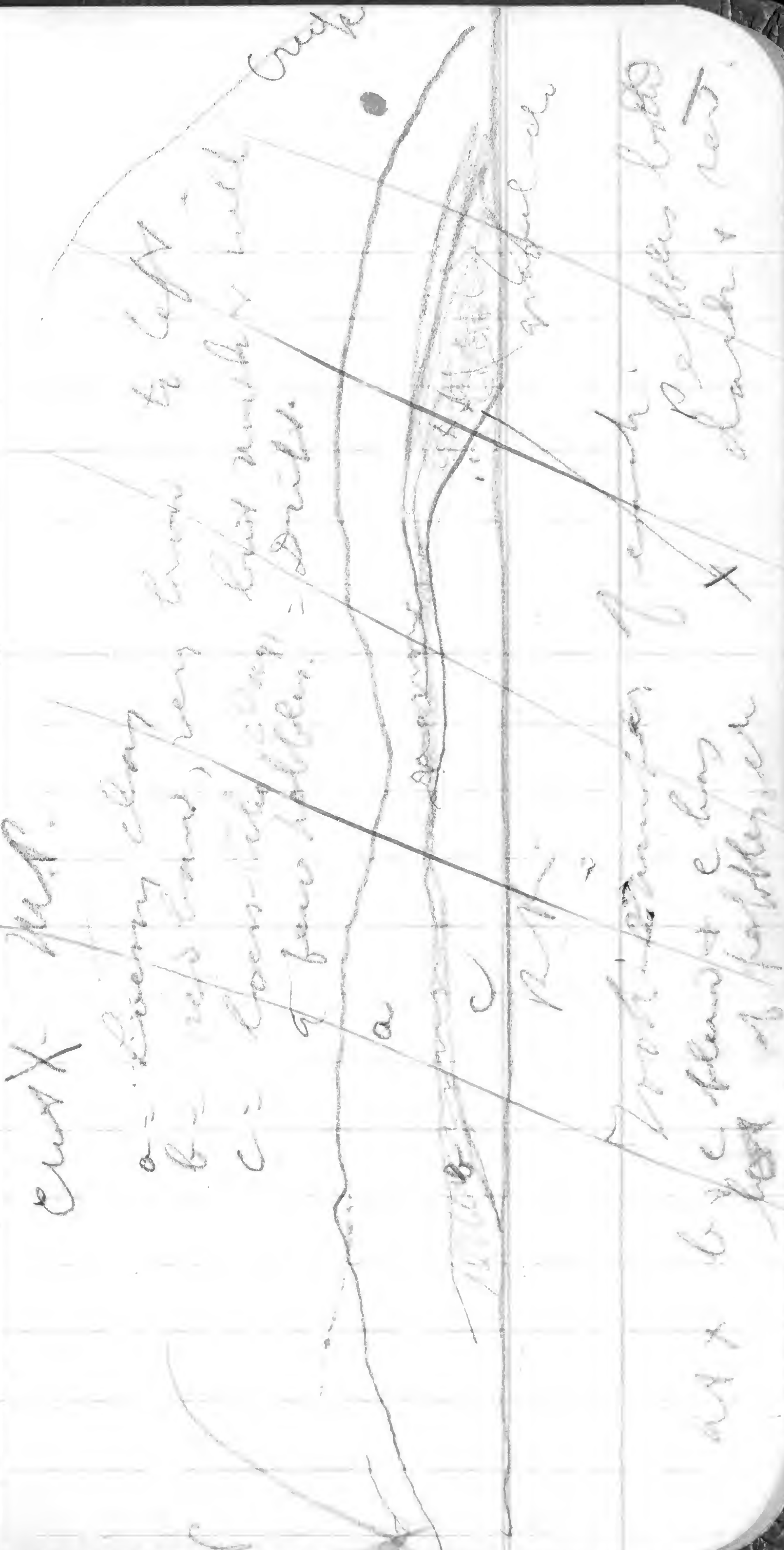
Cut 6. in places rarely flooded. 1st cut along WP is just beyond Walnut creek.

The line between a, b & c are quite sharp & abrupt. The water level is very low. Found 2 or 3 thin red layers in very fine & very soft & shaly bed of pebbly sand.

6.

Cut X - West.

- a = heavy clay
- b = red sand, very hard to left
- c = low-lying clay - but under hill of fine shales - drift.



Walnut Creek
1st cut
2nd cut
3rd cut
4th cut
5th cut
6th cut
7th cut
8th cut
9th cut
10th cut
11th cut
12th cut
13th cut
14th cut
15th cut
16th cut
17th cut
18th cut
19th cut
20th cut
21st cut
22nd cut
23rd cut
24th cut
25th cut
26th cut
27th cut
28th cut
29th cut
30th cut
31st cut
32nd cut
33rd cut
34th cut
35th cut
36th cut
37th cut
38th cut
39th cut
40th cut
41st cut
42nd cut
43rd cut
44th cut
45th cut
46th cut
47th cut
48th cut
49th cut
50th cut

7
 Cut 7 is deeper
 (15 ft) shows
 red layers, black
 on top, with
 occasional small
 pebbles & bluish
 joint clay below

The miller says it
 is 3 1/2 miles from
 the mill to the
 court house by
 wagon road.
 The court house is 2
 blocks away in
 western side.
 I had a 20 ft block
 W. of hotel before
 turning north.

9
 Cut 9 is a long
 cut - 60 rods -
 very cut of 17 yrs
 ago
 It is fully 8 ft
 deep along a great
 part of the top
 down



a = soil & yellowish
 (brownish) loose ~~loose~~
 In some places
 strongly oxidized layer
 seeming to include both
 a & c.
 c typical blue

loess, with *Complanata*
in part, a few
nodules, and
very tubes, &
this time I found
only a few fossils
of which I saw
two.

⁸
Cut 4 is at least
14 ft deep & seems
to be throughout
compact yellow
loess - with
some nodules, black
spots & blue
bands & streaks
below (see sample)

⁹
Cut 3 seems to
be higher than 4
than cut 4 & 4
is higher than
~~3~~ ⁷
In cut 3 is high
grade of RR, as
it slopes both
ways.

The lower part of
loess in cut 4
looks rather old.

⁸
Cut 4 begins about
100 yds beyond
cut 3 & is much
shorter & has more
abrupt slopes.

Toward W. end of
cut § 9 I found a
good narrow
lime nodules in
the blue loam.

In cut § 9

a is 2 1/2 to 3 ft
thick, most of it
blackish soil.
b is indefinite, but
mostly about a foot.
c - showed at least
6 ft. I dug into
it a foot below
R.R. but did not
get through it.

Sept 3-1906
Return to cut

3

1	section
2	loam
3	gravel
4	clay
5	shale
6	clay
7	clay
8	clay
9	clay
10	clay
11	clay
12	clay
13	clay
14	clay
15	clay
16	clay
17	clay
18	clay
19	clay
20	clay
21	clay
22	clay
23	clay
24	clay
25	clay
26	clay
27	clay
28	clay
29	clay
30	clay
31	clay
32	clay
33	clay
34	clay
35	clay
36	clay
37	clay
38	clay
39	clay
40	clay
41	clay
42	clay
43	clay
44	clay
45	clay
46	clay
47	clay
48	clay
49	clay
50	clay

1 = 2 ft. about 6 or 8
2+3 = 6 to 12 ft. or more
4 = 5-6 ft.
5 = 6-10 ft.

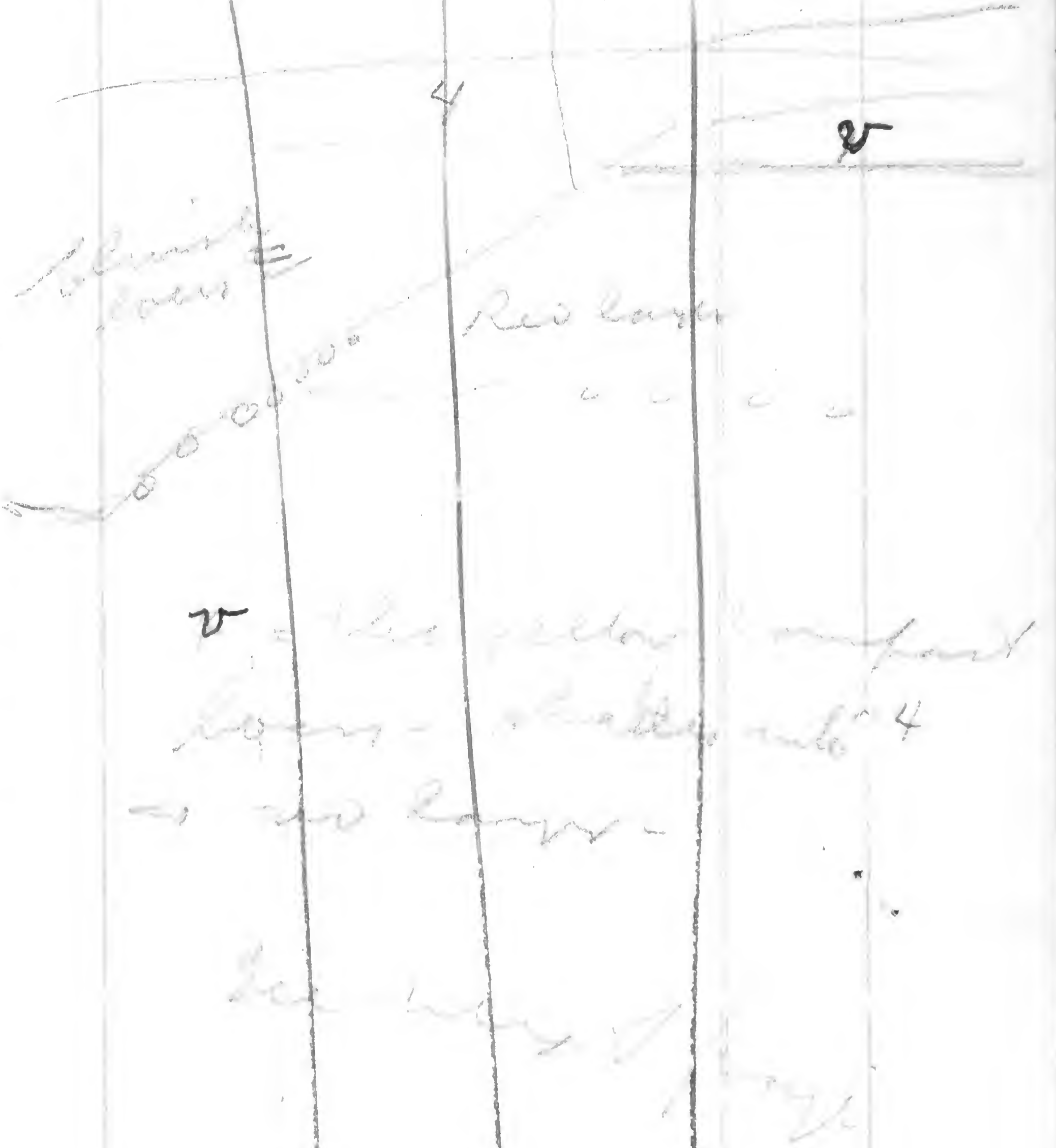
(with)

The south end of cut
3 & nearly horizontal
but slight dip
to N.

shale

2

In cut 2 (at bottom)
The blue sandstone
out to less than a
foot eastward.





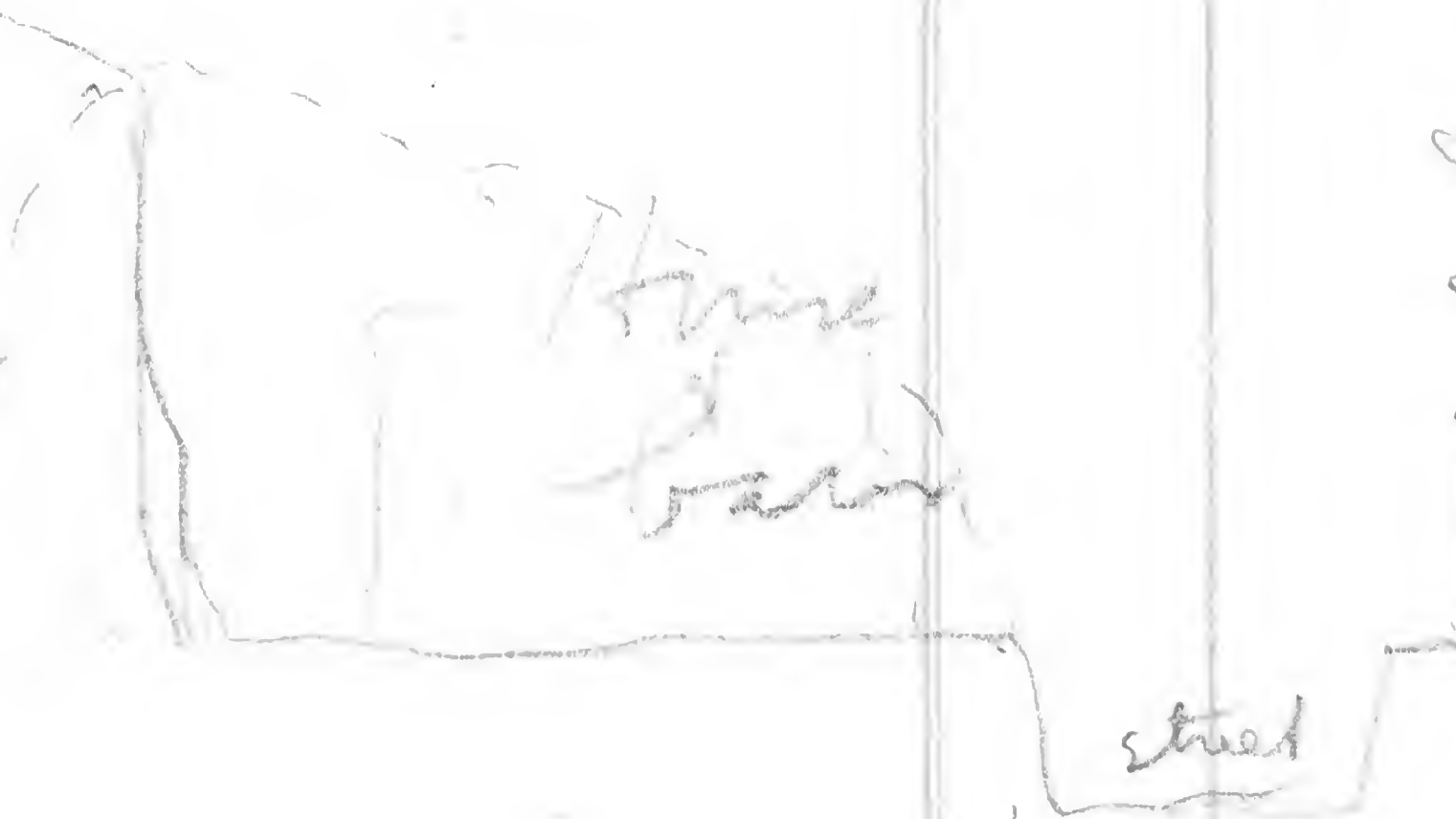
94

95

Hamburg, Pa.
First, visit exposure
at school house, at
end of bridge.
The sand has been
cut away

Cut 1,

about
30 ft



Looking N. E.,

- 1) is light yellow loess with some nodules & fossils. (This is where my fossils came from before.)
- 2) Is the red band ("red loess"), changing in short distance above into loess & below into 3.
- 3) - Is much like 2) & is a joint clay, somewhat yellowish or brownish

The boulders reported before are probably just below (3)

I climbed up the
W. slope & collected
fossils on lower slope
in yellow loess.
This loess, however,
is not the light gray
loess but a more
compact & in places
toward base a brownish
loess.

There are also, even
the yellowish parts, toward
base blue streaks &
band.

The red band of hard
joint clay shows
everywhere just
above level of road
on W. side of ridge
(near base).

The ridge is so
narrow that there
would hardly be
room for a wagon
road, and so steep
that it is almost
impossible to keep
one's footing without
the aid of the toe.

These bluffs, at
least as far up as
off Nebraska City, Ia.,
are uneven. There being
places where wind
formation is more
pronounced, & these
are knicker, & also
uniformly bare.
Where the bluffs

are lower & recede
 to some depression
 & valleys. With
 lower ridges, there
 is invariably timber.
 Back of the highest
 & steepest bluffs in
 pockets & valleys
 there is also timber.
 Top of 12th main
 ridge (S. end of ridge),
 above reservation
 is 135 ft above
 foot of cut 1.
 then drops to 110 then
 rises to 130² & drops
 to 105
 then comes by rise
 to 200 ft. above
 base of cut 1.

On top of this high
 ridge, at pt. marked
 240 ft. in my old
 notes, I found some
 shells, both fossil &
 what I took to be
 Euc. grommi recent.

- ✓ Photo 31 - Looking down
 end ridge from 240 ft
 point.
 Beach ridges in background
 Hamburg beyond.
 - ✓ Photo 32 - Field of mounds
 - ✓ Photos 17 & 18 - Looking
 N. along bluffs
 from 240 ft. pt.
- at 240 ft pt. took
 sample of surface loess -
 there is no black soil.

This is fossiliferous
(see above).

Still N, on higher
ridge - 220 ft -
There are flat topped
fragments
in this fragment



of Union & other
shells are
fragment.

✓ Photo 13 - Looking N
from 2nd ridge north
of 220 (shell) point.

✓ Photo 14 - Looking south
(back) from

same point, 120
ridge in foreground
in Union ridge.

About 2 ft below
top I found a pocket
of shells (see box)

✓ Photo N.V. M. along
hills (see timber
in shallow valley

✓ A - toward the setting
sun - West

✓ 23724 - View of base
Mel. Cy. morning
9/3/06

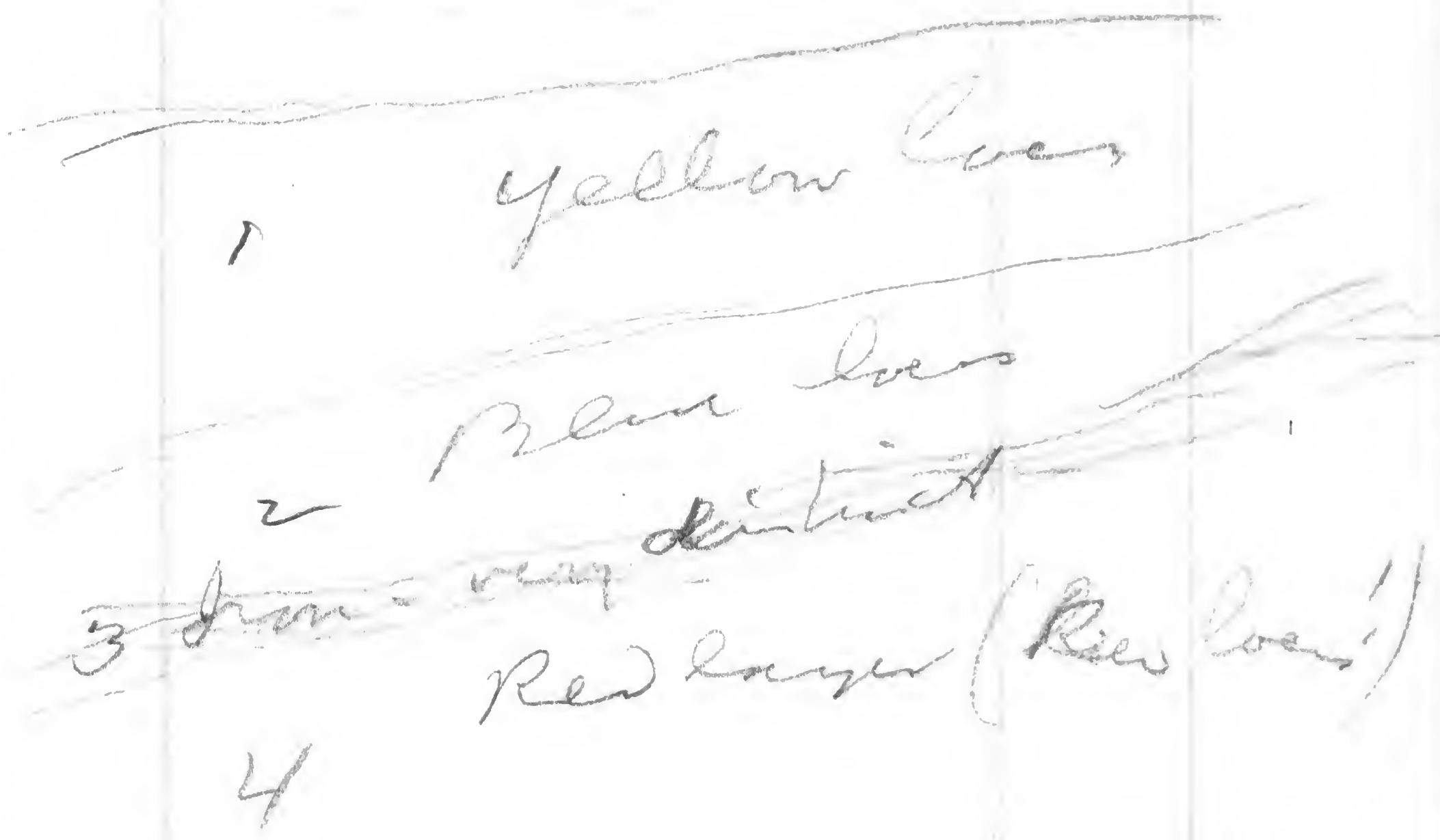
Sep 4-1906
 Went N. from Hamburg
 along bluff.
 Red layer follows
 from tip of bluff
 about 150 yds &
 then disappears.
 It is irregular

✓ Photo 5 is a loose
 ridge with calcareous
 layers at base
 also of (shaly) loess

✓ Photo 6 - is not 6. along
 road
 yellow (orish) loess.
 blue loess. Ferritic
 "Red loess!"

The road here is only a little
 above bottom - a few feet

Cut 6 is 7-8 ft deep
 right next to road &
 is as follows:



- 6 { 1 - in yellow (pale) loess with
 small nodules & a few
 fossils (one box)
 2 - In indurated blue loess
 with few & small nodules
 & a few other nodules
 3 - Brown & yellow loess 1 ft

4 is like Willson's
red loam, but is
real joint clay.
Took samples of 1 & 2

Cut 8. is an exposure of yellow
loam (like 1 in cut 6) with
nodules, & a few
fragments of bones.
It is 8-10 ft. high &
runs down to bottom

cut 9 is beyond creek, at
foot of very high ridge
on a long approach
to it.

At 9. end it is all
yellow jointed loam
like of cut 6.
A little further

along blue loam appears
also jointed. &
finally red layer.



- 1 is very fossiliferous in places, & there are little bands of broken shells, as if there has been wash.
- 2 - Is blue loam with few iron tubes & some shells.
- 3 - Is hard somewhat reddish stuff, evidently joint clay, though compact & uniform the lower above 3 shows lamination & that for a ft. or 2, & there are streaks of blue loam extending to left (N.) where it disappears.

The line between 1 & 2 is not sharp & there seem to be some mixing took samples of 1, 2 & 3.

Mon (photo) ^W slope of high ridge above cut 9

27 & 28 - view N. from top of high ridge 235 ft above road at church

X - Looking N. along comb of ridge
 X - " E. of N. side
 protected valley

Top of high ridge is 235 ft. above road at church
 The nearest smaller knob is 190 ft.

I found recent shells
on *prater* side of
ridge as far up
as trees & shrubs
go, — to less than
20 ft from top.

P.M. went S. into Atchison
Co. Mo.

✓ B (photo) of ridge
where faces on valley
in base & immediately
around on angle trees
are abundant.

Looking down river I
could see that as the
bluffs curved westward
6 or 7 mi below state
line the whole face
of bluff was
timbered — like
Melanota side.

112

Atchison co. Mo

Ex 1. is about 60 ft.
above road 1/2 mi. S. of
E. & W. road, on which
I came.

This is yellow loess
with lime nodules,
mostly small & irregular
& is quite (very)
fossiliferous.

I see 2 boxes of shells.

about 125 ft. higher
to top of bank, which
then runs still
higher.



m

Hamby m

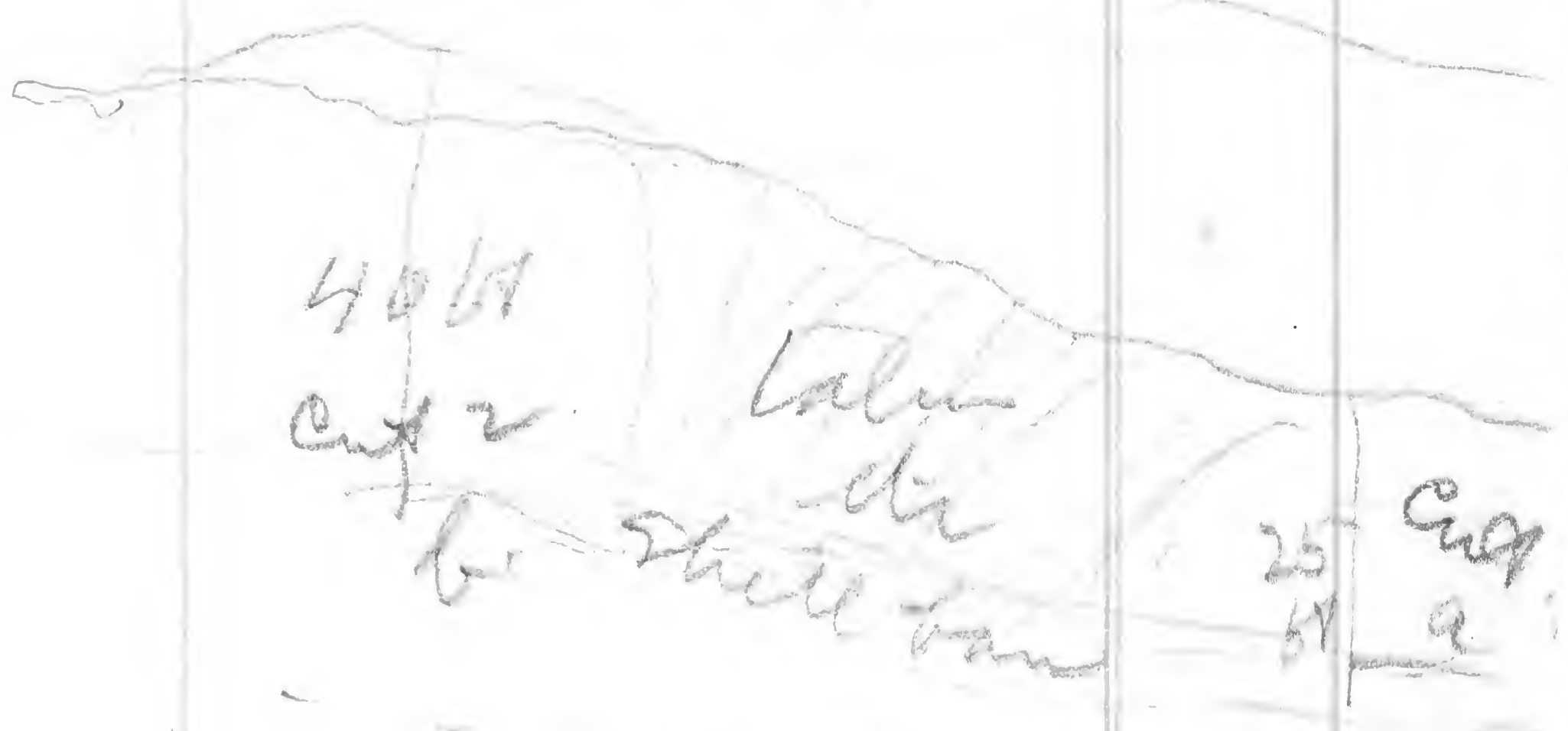


S

As cut 1 the lower
 2 or 3 ft. are
 reddish joint clay
 (the red layer)
 No fossils in this.

cut 2 is a few
 feet higher (about 10)
 than cut 1, & runs
 up toward N.
 It consists of the
 same thin shales
 but a little lower
 below & shows
 a little of
 red layer
 fossils very abundant
 nodules - yellow to
 the base is very hard
 when dry, slightly brownish.

with black root-
lines & calcium
spots & lines, as
well as nodules.
The shells seem
to be in a band
about 8 ft wide,
whole exp. is 25 ft
(estimated)



Shell band yellow
crystalline somewhat.
Exp. 2 run for
200 yds (estimated)

but is partly covered
in places.

In evening packed boxes
of plates, Nos. 7 &
8.

Aug. 29 Accounts

Glenwood lunch	.25
RR. fare Paulina to Red Oak	.73
RR. fare	.25
Aug. 30 Hotel (Evening) New Oak	1.00
Lunch " "	.20
RR. fare to Malvern	.58
Bike " "	.25
RR. fare Malvern to Shewardon	.68
Bike	.25
Aug. 31 - Hamburg - Julien hotel ^{sup. city of} hotel	1.50
Trayage -	.15
Express charges ^{Adams Exp. Co.} anger	.45
RR. fare to Nebraska City	.72
Bike	.25
Trayage, Neb. City	.25
Baskets	.05
Sep. 1 - RR. fare to Peru	.45
Dinner, Peru	.50
RR. fare to Neb. City	.45

Sep. 3 - ^{sub. exp.} sub. exp.	\$ 5.00
Hotel Watson 2 1/2 days	.72
RR. fare to Hamburg	.25
Bike	
	<hr/>
	14.43

122

