

*D. 111*

E. O. Ulrich

Mississippi Valley Sections, 1903,

Thebes and Cape Girardeau visit, 1907.

Nb. 6, 1903, 1907.

U. S. GEOLOGICAL SURVEY  
TRAVERSE BOOK

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9-904

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*in 60' bluff of massive green-gray ss. 300 yds. from down. Dip here and hence rapid down river.*

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100' above these layers similar rocks (? fossils) these show again  
in 60' bluff of massive yellow-gray ls. 300 yds. lower down.  
Dip here and hence rapid down river.

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100' Above these layers similar rocks (? fossils) these show again in 60' bluff of massive yellow-gray li. 300 yds. lower down. Dip here and hence rapid down river.

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*finer grained, gray to buff. Full of fossils - Lower Helderberg. 100' above these layers similar rocks (? fossils) these show again in 60' bluff of massive yellow-gray li. 300 yds. lower down. Dip here and hence rapid down river.*

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*finer grained, gray to buff. Full of fossils - Lower Helderberg. 100' above these layers similar rocks (? fossils) these show again in 60' bluff of massive yellow-gray li. 300 yds. down. Dip here and hence rapid down river.*

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in section at Wickes . . . . . 12, 13

in section at Merimec Highlands . . . . . 14

in section on Aux Vases River . . . . . 18

Sulphur Springs, Mo.:

in section above mouth of Rock Creek . . . . . 1

Peter McCloon, foreman at . . . . . 9

lower part of bluff contains 45 feet of crystalline (? Trenton) rock . . . . . 1

section 1 mile south of at Goetz's quarry, Glen Park station . . . . . 8-11

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Thebes ss.: in section at Thebes . . . . . 44, 45

Trenton ls.:

45 feet of crystalline rock at Sulphur Springs may be . . . . . 1

base of Calena-Trenton, section Riverside to Glen Park . . . . . 2

exposed in bluff below Rattlesnake Creek, in bluffs 1 to 4 miles below on road to Herculanum, and in bluffs at Selma . 3

*100' above these layers similar rocks (? fossils) these show again in 60' bluff of massive yellow-gray li. 300 yds. lower down. Dip here and hence rapid down river.*

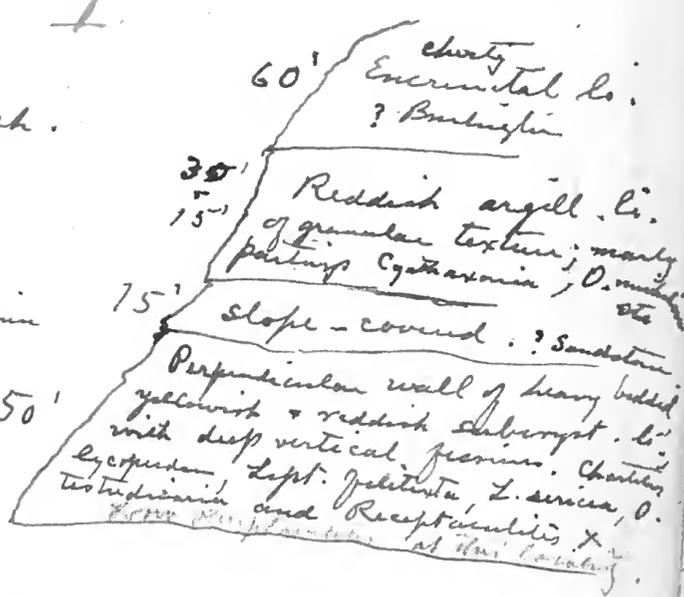
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Notes on Missouri side of Mississippi  
 River section from St. Louis southeast  
 to Commerce. Taken from  
 B.F. Shumard's rept. in Mo. Geol.  
 Survey, vols 1 & 2 - 1855-6.

In Jefferson Co., just above mouth  
 of Rock Creek <sup>Sulphur Springs</sup> hills about 170 ft. high  
 exhibit following section:

Similar sections  
 occur below Rock Creek.

Just  
 Between this point &  
 Selma the strata continue  
 to rise until 1 m. below  
 Herculaneum where the  
 Calceferous comes in.  
 Between this point & Selma  
 the Cal. rises till 150'  
 are seen in hills 2 m. S.  
 of Platteau rock.



This section should be studied by  
 means of row boat from nearest point  
 to Rock Creek to Selma. Probably  
 this would be the best mode of  
 studying the whole section from  
 Rock Creek to Cape Girardeau -  
<sup>Thibet's</sup> ~~Thibet's~~ <sup>vicinity</sup> - and cheapest too.

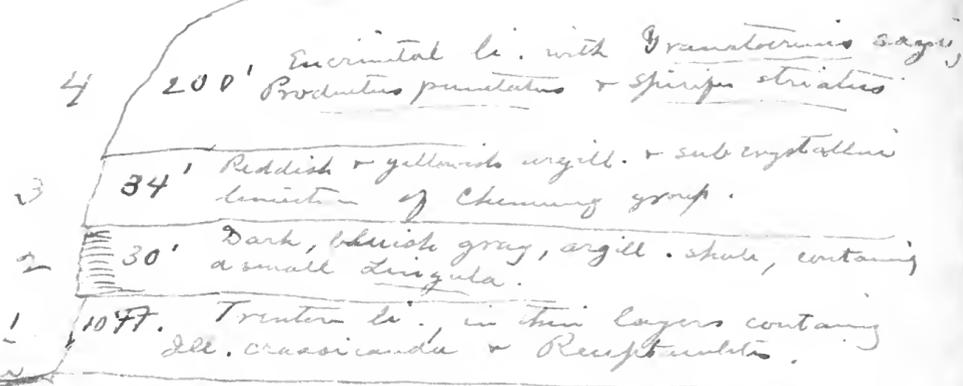
at Sulphur Spring the lower part of bluff contains 45 ft. of  
 Crystalline (Trenton) rock with Receptaculites. Over this come  
 7 ft. white & brown s.s. made up of moderately fine quartz grains  
 loosely cemented. These 8' compact yellow li. & 25' red & argillaceous  
 compact li. regard to Chemung. Finally, 25 ft. encrinural li.

About 1 m. below <sup>Sulphur</sup> ~~Sulphur~~ <sup>Spring</sup> ~~Spring~~  
 hills 130 ft. high. River shore here magnesian-calc. <sup>strat.</sup> li.  
 fine grained, gray to buff. Full of fossils - Lower Helderberg.  
 100' above these layers similar rocks (? fossils) these show again  
 in 60' bluff of massive yellow-gray li. 300 yds. lower down  
 Dip here and hence rapid down river.



VI

About 4 miles above Salt Point, & soon after bluffs approach River again on Mo. side, elevation of hills is 274' & shows following section.



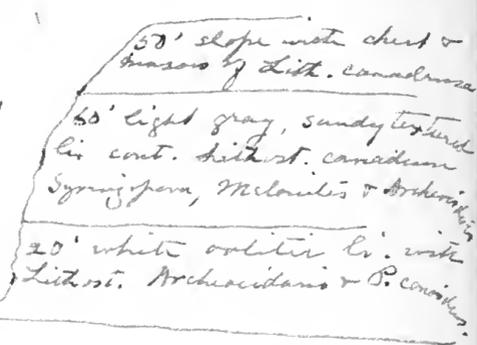
(? Chattanooga) No. 20, 1, 20 exposed in a ravine a couple of hundred yds distant from river. Underlies Chemung and overlies Trenton in a low ledge scarcely above water level. The shale is seen again on Establishment Creek 200 yds. above its mouth in a ledge 3 ft. high.

Archimedes li. <sup>to s.e.</sup> outcrops in hills near river 2 1/2 m. s. of Establishment Creek. a mile below hills 100 ft. high consist of alternations of quartzose s.s. & chert. Lower down the Arch. li. appears in perpendicular walls, facing river, presenting peculiar fluted appearance. 1/2 m. still lower the hills are 180' high & consist of sub-crystalline li. of a moderately coarse texture and light gray & blue. Two miles above St. Genevieve strata dip n.e. & just above town are seen in massive beds with a layer of oolite. 3 m. later public. he calls the latter St. Louis.

The Ferruginous (Cypress, New Vases) s.s. in bluffs below St. Genevieve (but back from river) about 3 miles. The St. Genevieve li. outcrops beneath s.s. but begins already between a mile & two miles below town, Shumard calls it a 2nd Archimedes li. See about Arch. & possibility of its being Trenton instead of Primerton. S. says the St. G. is well exp. on Ill. side short distance above Primerton & also below; where it is said to be full of *Spirifer* & *Heller* fossils.

On north <sup>to south</sup> Galowrie creek <sup>3 miles above mouth</sup> the St. L. is said to be succeeded by a third Archimedes li.

At oolitic li. quarries on the "Plank Road" about 2 m. west of St. Genevieve the following section of St. L. li. Whole St. L. estimated 100-200' St. Genevieve li. .. 50' Ferr. s.s. .. 80' Kaskaskia li. taking up whole interval bet. Ferr. s.s. & Coal Meas. given at 200 ft.



Ferr. s.s. said to contain locally pebbles of quartz & jasper.

Kaskaskia li. outcrops bank of river just above St. Marys & on the Saline river near to mouth. Very fossiliferous here.

1 m. above St. Marys, just above water, 15 ft. quartzose s.s., in thin layers, passing into gritstone and coarse conglomerate. pebbles up to size of hens egg. Above these s.s. is a slope of 25 ft. covered, & then the Archimedes li. with usual fossils.

No exposures for 20-25 miles on Mo. side. The first comes in half mile above Baileys Landing in Perry co. Here hills are 150 ft. high, consisting entirely of s.s. closely like saccharoidal.

Farther down, couple hundred yds above landing, a low ledge of thin bedded, blue siliceous li. sets in. These are overlaid by similar but thicker beds. all dip 15° n.e. Fossils few, poor, (*Encrinurus* & *Atrypa*.)

1/4 m. below landing is a bluff 100 ft. high, of heavy bedded, gray magnesian li., compact & fine grained. Near top contains *Rhyol.*, *O. subarguta*? and *S. filitexta*? Fossils poor. ? Trenton.

About 1 m. below Baileys landing, sec. H, T. 35, R. 12 E, hills 130 ft. high. River shore here magnesian-calc. <sup>shaly</sup> li. fine grained, gray to buff. Full of fossils - Lower Helderberg. 100' above these layers similar rocks (? fossils) these show again in 60' bluff of massive yellow-gray li. 300 yds. lower down. Dip here and hence rapid down river.

About 4 miles above Salt Point, & soon after bluffs approach river again.

Good Chester fossil localities in hills 2-4 miles below B. ldy. Hills 200 ft. high. strata horizontal, then (4m.) dipping S. bringing s.s. down till it makes up nearly whole hill. (What s.s. is this?) (? syncline)

Chester li. begins to rise again very soon, till they occupy whole hill. They continue with excellent fossil exposures to Brazos Bottom.

At Wittenburg, bluffs are 150' high. Lower 70 with ledges of gray, highly inclined, li. containing *Productus*, *Echinoceras* and fish teeth occasionally. strata resemble those just above St. Genevieve.

Up. third of hills covered with soil & loose masses of ss. nearly opposite this is Devils Bake oven, a isolated mass of rock, 60' high, with large hole on south face.

Opposite the oven, on Mo. side, bluffs 120'. near base thin bedded mag. calc. rock similar to Helderbergian at Baileys ldy.

The Grand Tower a mass of rock dipping S.E. 25°, is supposed to be lower than Bake oven (i.e. Helderberg)

About 1/2 m. below Tower, near middle of river is a huge mass of chert, rising a few feet above water level. What is this?

The Chalk Bluffs are on hills 75-200 ft. high. Occasional exposures of white silicious clay, filled with fragments of up. sil. chert. (? Residual)

From 2 m. above to 2 m. below Birmingham, Helderbergian exposed at base of hills for 10'-50'. Li. cherty, chert nodular. Fossils said to be abundant only at Birmingham.

3 1/2 miles below Bis. some rocks in perpendicular bluff 70' high. Lower pt. chert & li. chert in layers 1"-1 ft. upper layers? hydraulic and contain beautiful *Comaroceras*. Similar rocks continue to Bainbridge.

No exposures on Mo. side for 6 miles.

One & a half to 2 m. above Cape Girardeau the limestone of that name sets in. An exposure of 40 ft. occurs here. - Bluish-gray li., layers 2"-6" vertically jointed. Rock compact, conchoidal fracture. Weathered surface often covered with film of oxide of iron. In some portions of mass fossils very abundant.

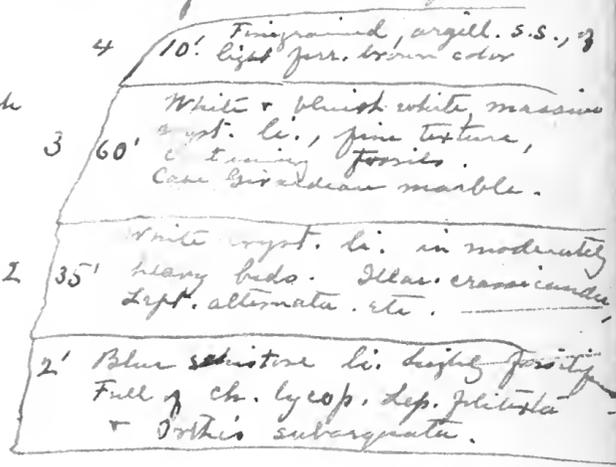
- |                   |                              |                      |
|-------------------|------------------------------|----------------------|
| <i>Cyphaspis</i>  | <i>Homonoceras</i>           | <i>Atrypa</i>        |
| <i>Acidaspis</i>  | <i>Glyptoceras</i>           | <i>Leptaena</i>      |
| <i>Proctus</i>    | <i>Tentaculites incurvus</i> | <i>Orthis</i>        |
| <i>Encrinurus</i> | <i>Protaster</i>             | <i>Pleuronoceras</i> |
| <i>Chironus</i>   | Other crinoids.              | <i>Turbo</i>         |

At the Cape, Ordovician rocks again will be exposed.

No 3 occurs in quarries about 3/4 m. from river. & on river bank in front of convent.

Rocks form low ledge along river for 1/2 m. below town.

Then comes bottom land for 5 miles to a small creek.



Just below mouth of this creek Ordov. again exposed in bold escarpments 55' high. The lower (no!) layer is 15 ft. thick & crowded with good fossils. They dip down river & out in 3 or 400 yds. In upper most layers of marble S. found *Receptaculites* and good specimens of sculptured crinoid (? *Comaroceras*) (Are there Tertiary s.s. & clays over there here?)

Grand Chain XVII



About 4 miles above Salt Point, & soon after

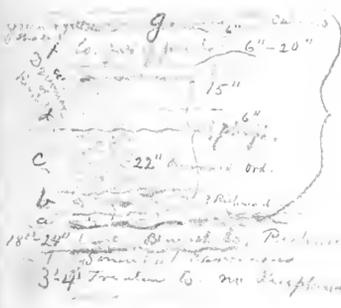
Please refer to page about your visit of it.

in upper part, sand grains. F should be compared with Rockland ls. of Indiana. Q (or F) is to be correlated with green sand top of shell margin in Tennessee & elsewhere.

Section at George's quarry, Glen Park Station, Md.

Oct. 30, 1935

No exposure 45' to top of hill. See face stream with about most of it of top of stream green color. Fossils about 1/2 inch diameter, etc. etc. etc.

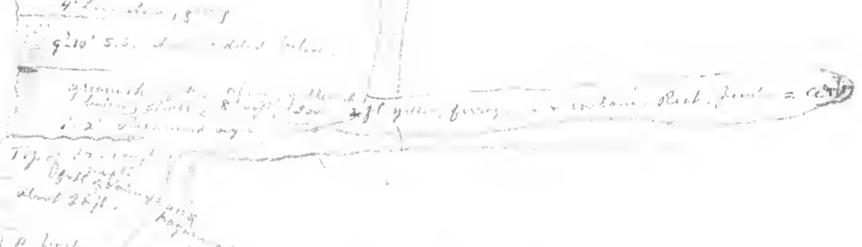


4' silty clay sand - rd, clay & siltstone to top of hill. 3 1/2' grey, silty shale, sub-spherical to small pebbles. 10' yellow fine grained silt probably calc. con.

Mined fauna plastered in 2' layer or in a & b. more particularly in a. Small black phosph. pebbles occur in d, e & f, g, grey ones in a & c.

F  
O  
C  
to top of Rock. ls.

see also in quarry side (cut at walking runway) of d & f as well as in



See next page

Study this page more carefully

Bill McNamee  
Saginaw quarry, Md.

about 1/2 ft to 1 inch long

Red part of rock is exposed at the surface

Following the section up river Richmond seems to continue to rest on Washington bed, ~~then~~ until small cut just south of Rock Creek where I failed to recognize it. The contact is not a very obvious line until you examine closely when it is usually seen to be formed by a rusty, indurated clay (phosphatic?) seam 0-2 or 3 inches thick. The fossils mark the horizon sharply enough. It appears that in going north the Transition lies at the top.

*Trilobites*  
*Strophomena*

At ~~the~~ <sup>some 500 yds. north</sup> Richmond was first seen at rock in a soft ~~place~~ <sup>place</sup> with ~~it~~ <sup>it</sup> ~~is~~ <sup>is</sup> wanting at Blue Park as a rule, the ~~strophomena~~ <sup>strophomena</sup> layer being at the top. 200 yds. further north, the ~~Strophomena~~ <sup>Strophomena</sup> layer is at the top and this continues ~~then~~ <sup>then</sup> for 7/8 mile. At cut just south of Rock Creek it was not recognized, nor was it seen in cut 400 or 500 yds. farther north, i.e. on the north edge of down of Sulphur Springs. But a few inches of the ~~Strophomena~~ <sup>Strophomena</sup> bed was left just south of S. Spring Station.

While the Richmond was ~~recognized~~ <sup>recognized</sup> just south of Rock Creek, just north of Sulphur Springs bed were seen. The Richmond here ~~rests~~ <sup>rests</sup> on ~~the~~ <sup>the</sup> ~~bed~~ <sup>bed</sup> ~~of~~ <sup>of</sup> ~~the~~ <sup>the</sup> ~~Richmond~~ <sup>Richmond</sup> ~~and~~ <sup>and</sup> ~~is~~ <sup>is</sup> ~~not~~ <sup>not</sup> ~~clearly~~ <sup>clearly</sup> ~~delineated~~ <sup>delineated</sup> but fossils, ~~are~~ <sup>are</sup> ~~seen~~ <sup>seen</sup> in this section.

The ~~Dev~~ <sup>Dev</sup> ~~beds~~ <sup>beds</sup> ~~here~~ <sup>here</sup> ~~could~~ <sup>could</sup> ~~bring~~ <sup>bring</sup> out a good ~~part~~ <sup>part</sup> ~~of~~ <sup>of</sup> ~~the~~ <sup>the</sup> ~~Richmond~~ <sup>Richmond</sup> ~~and~~ <sup>and</sup> ~~is~~ <sup>is</sup> ~~not~~ <sup>not</sup> ~~clearly~~ <sup>clearly</sup> ~~delineated~~ <sup>delineated</sup> but fossils, ~~are~~ <sup>are</sup> ~~seen~~ <sup>seen</sup> in this section.

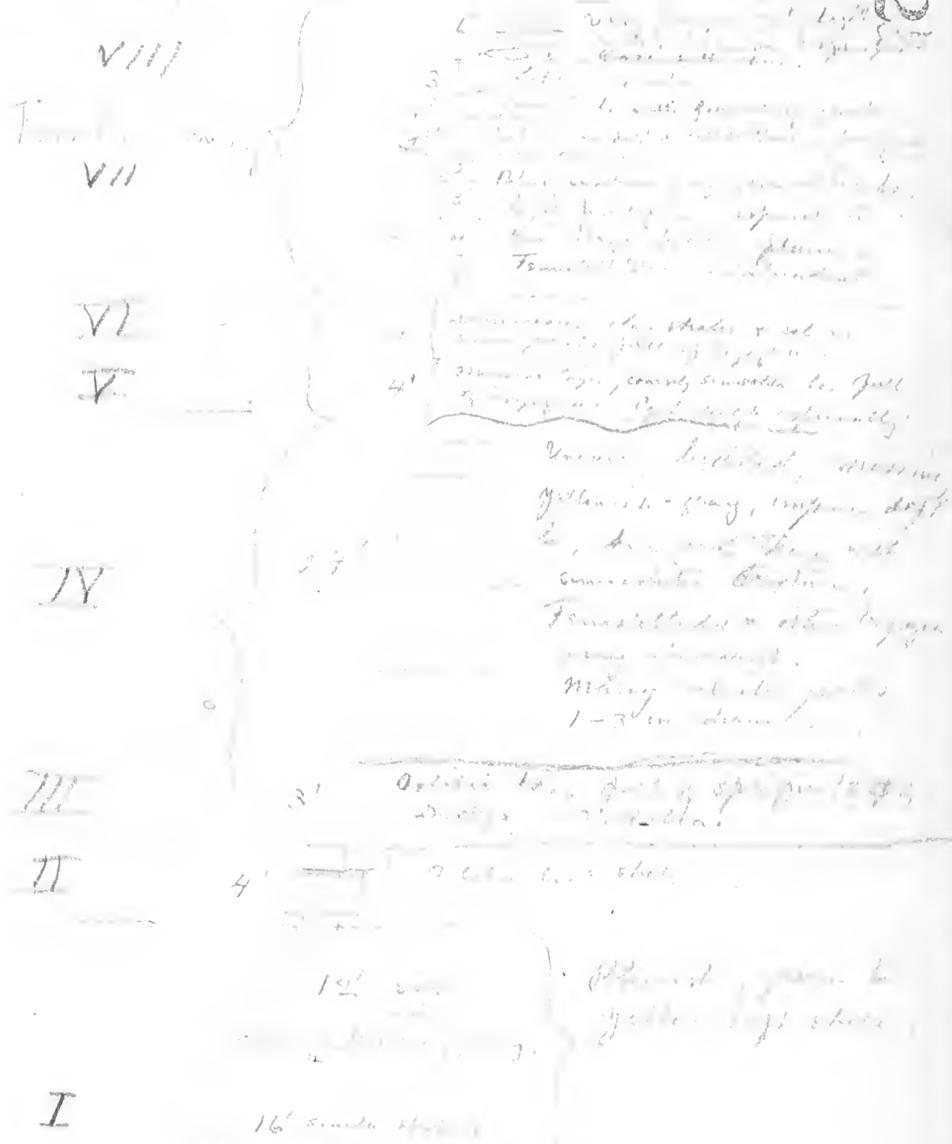
*Strophomena*  
*Trilobites*

(Bassberg)  
at base of ~~Strophomena~~ <sup>Strophomena</sup> ~~bed~~ <sup>bed</sup> ~~is~~ <sup>is</sup> ~~not~~ <sup>not</sup> ~~clearly~~ <sup>clearly</sup> ~~delineated~~ <sup>delineated</sup> but fossils, ~~are~~ <sup>are</sup> ~~seen~~ <sup>seen</sup> in this section.

X ~~At~~ <sup>At</sup> ~~the~~ <sup>the</sup> ~~base~~ <sup>base</sup> ~~of~~ <sup>of</sup> ~~the~~ <sup>the</sup> ~~Richmond~~ <sup>Richmond</sup> ~~bed~~ <sup>bed</sup> ~~is~~ <sup>is</sup> ~~not~~ <sup>not</sup> ~~clearly~~ <sup>clearly</sup> ~~delineated~~ <sup>delineated</sup> but fossils, ~~are~~ <sup>are</sup> ~~seen~~ <sup>seen</sup> in this section.

About 4 miles above Salt Point, & soon after

Section at ...



About 100 feet of Warsaw St. Louis

Almost certainly ... but not seen by me



Noticed from car window, Memphis & St. L. branch of  
 Foster, Trp. St. Louis to St. Genevieve.  
 Red shaly beds (Fossiliferous) at base of Mississippian  
 well shown at number of <sup>in cuts</sup> points, between  
 Birchey (where Kimmorish outcrops) and Establishment  
 (Creek) especially well shown in bluff of creek, but  
 not, apparently easily accessible.  
 South of Establishment large <sup>the</sup> cuts  
 along bluff with bluish shaly rocks  
 beneath St. Louis. These may be Warsaw  
 of Wicks and Columbia Ill. type.



About 4 miles above Salt Point & soon after  
vicinity of St. Genevieve, Mo.

S. J.

2 - 200

See p. 17  
St. L.



2 m. West of town (1 m.) at base of hill on North Bend about  
427 ft. (see p. 17) of Pol. ls., the lower soft ls. with the upper slightly gray-  
shaded pinkish gray, chiefly Lith. unstratified, the latter especially  
upper part, above white cherty ls. to top of hill - see sketch  
section - rocks are somewhat northward from St. Genev.

Nov. 3

Going S.W. from St. Genevieve on Trade School Road,  
first 3 miles in all St. Louis. Then some of them  
cherty beds in which may be Tullahoma. These  
continue to top of hill 100 yds east of 5 mile post,  
where they give abruptly place to <sup>upper</sup> Carter ls. which continues  
to base of hill. After crossing creek 1 m. up St. Mary, side on

St. Genevieve & the marble from ...



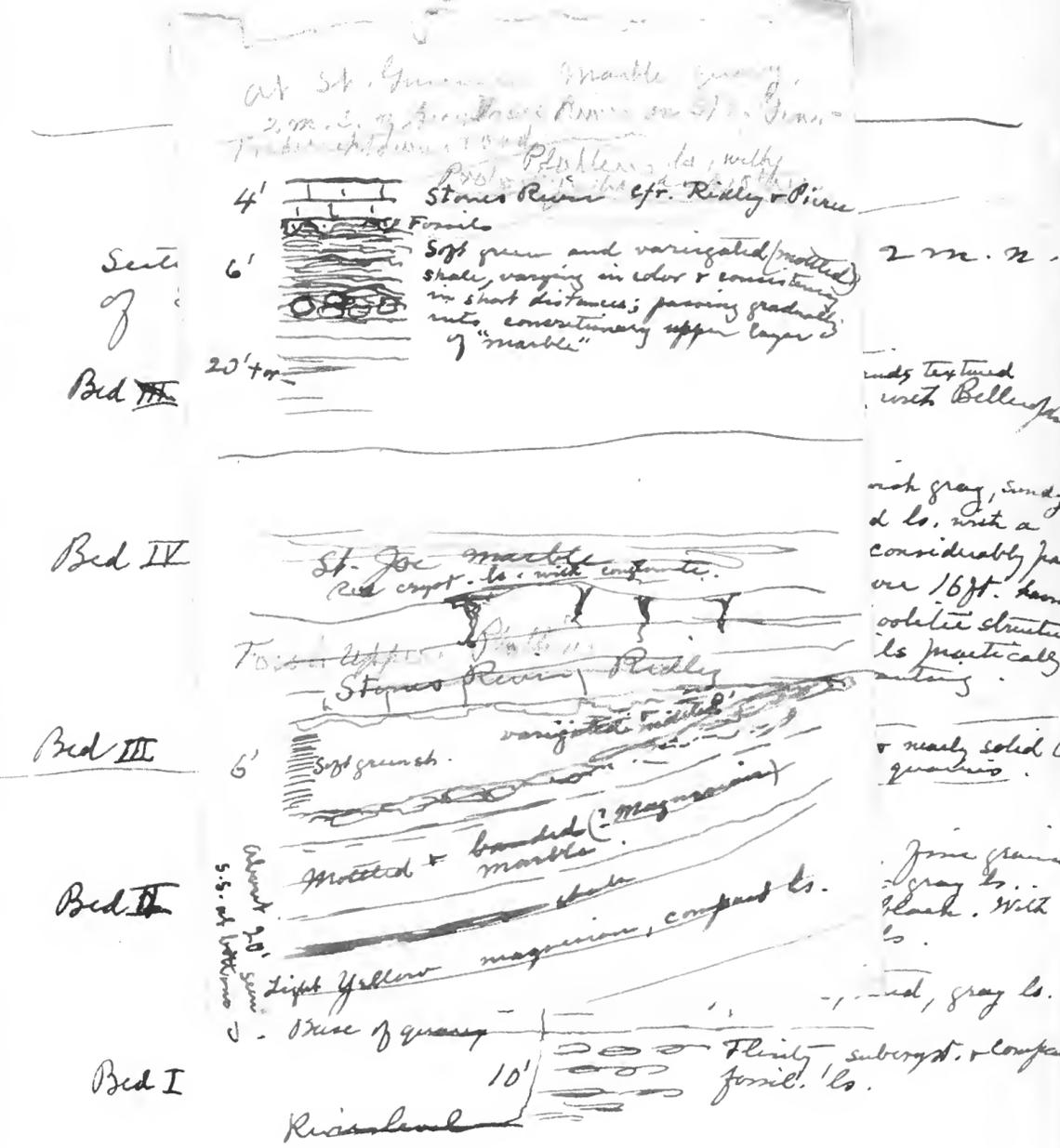
and a mile or more further St. Peter is first seen  
Base of St. Genevieve is a ls. range. St. Cedar is over  
50 ft. thick. 1st stage is a thin bedded rock, apparently  
not over 100 ft. It may be connected to Mansfield ls.  
(No fossils seen) but related to lower) of <sup>St. Peter</sup> ls.

in vicinity of (St. Genevieve) old land conditions are nearly shown  
St. Peter is siliceous, in part quartzite. Over it is 1st stage  
which contains the "marble"; or <sup>St. Genevieve</sup> ls. (St. Genevieve) or  
St. Joe <sup>ls.</sup> may rest on it. The S.S. is usually found  
a very irregular floor. Where the St. Joe rests on marble

it is fissured and the fissures filled with congl. + red  
ls. & the surface pitted with some material. The <sup>marble</sup> <sup>is</sup>

also is similarly eroded & fissured.

The "marble" is banded consistently  
- or mottled - with red sands and yellow  
and magnesian apparently. Rather compact



Section of quarry  
above St. Genevieve, Mo.

17



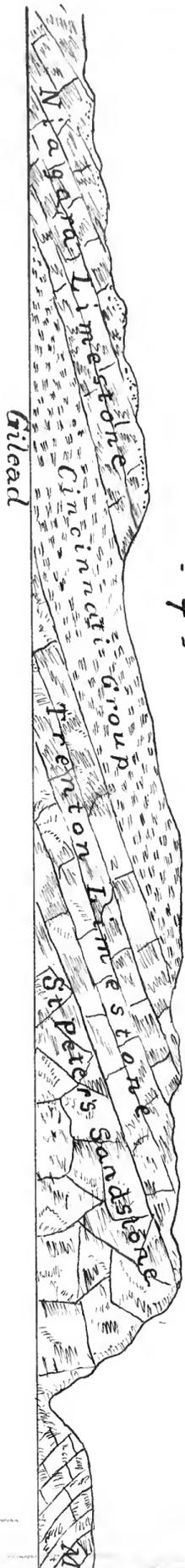


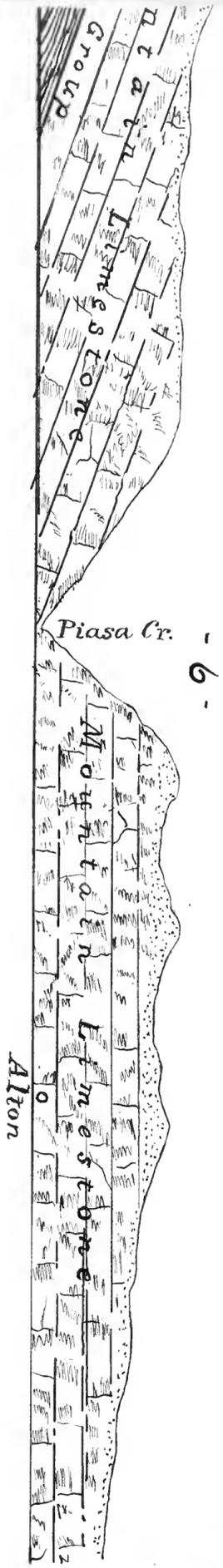
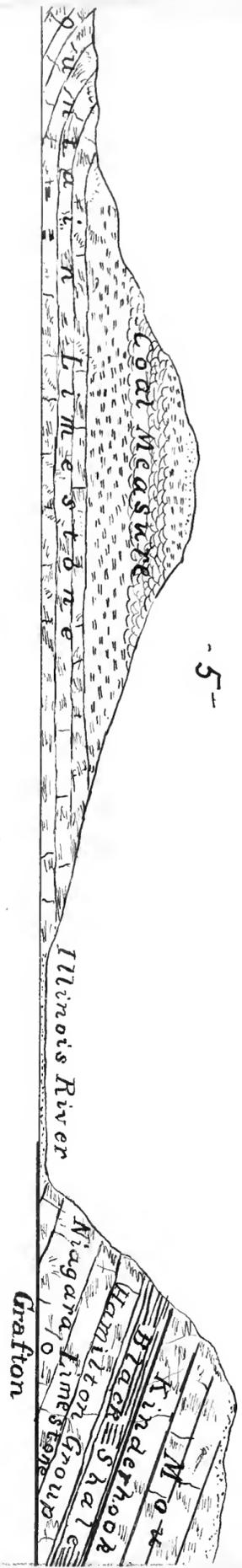


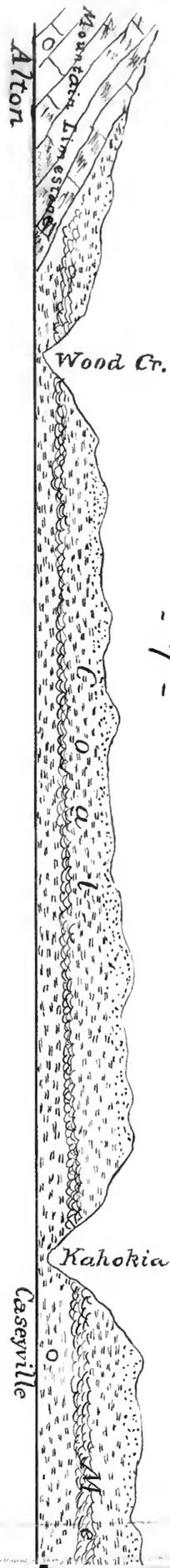




- 4 -







-7-



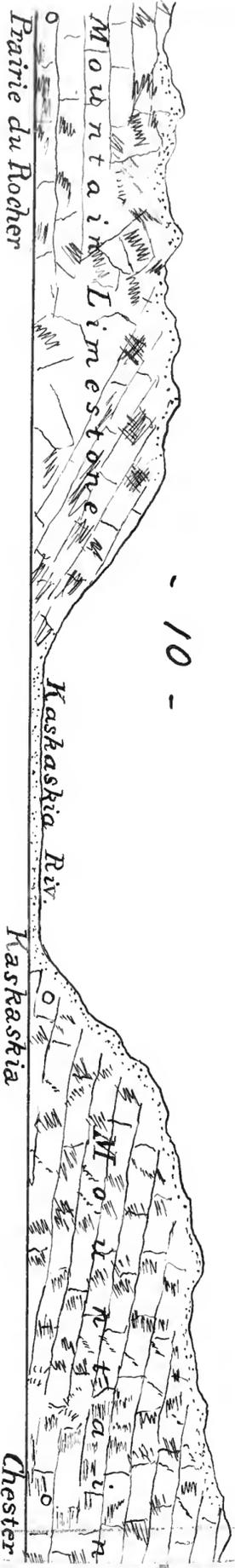
-8-

Saltlick Point



- 9 -

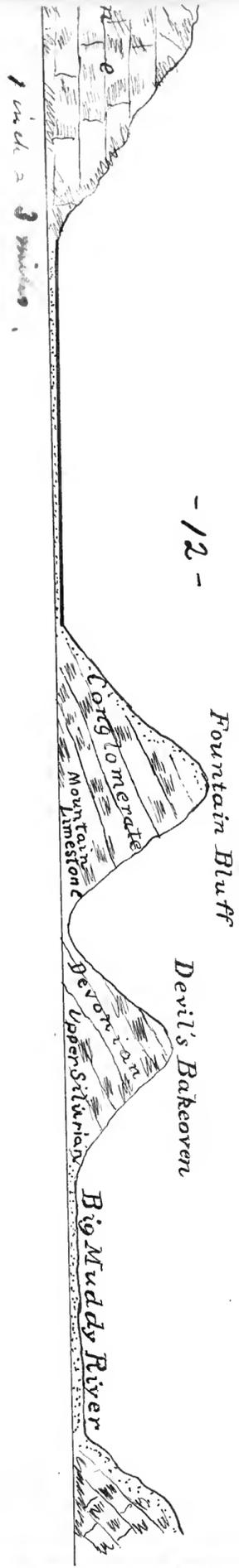
- 10 -



Prairie du Rocher

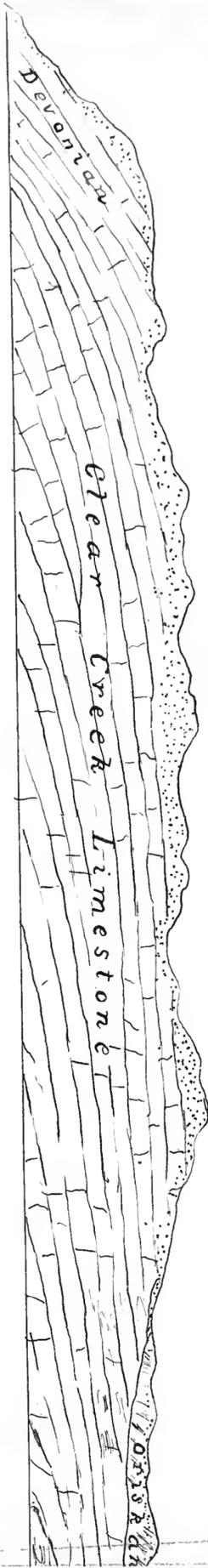
Kashaskia

Chester



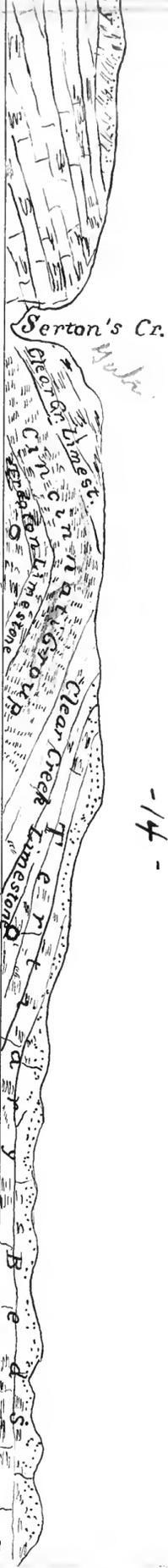
XII

width 2 3 miles



-13-

-14-



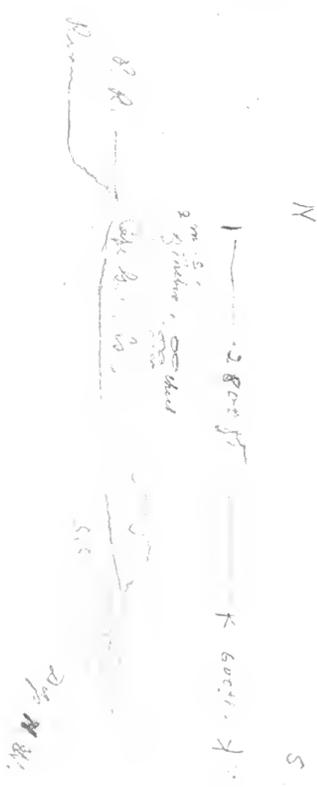
1 m. = 1 inch.  
300 ft. = 1''



See p. 44

5.5 - ... making unimportant on sheet beneath Thebes S.S.

Approximate  
N 2 m. south of Thebes & Thebes 3400 ft.



See p 45

A l i u r i u m  
Cairo

-15-



1903, Nov. 6

20' ... light ...

20' ...

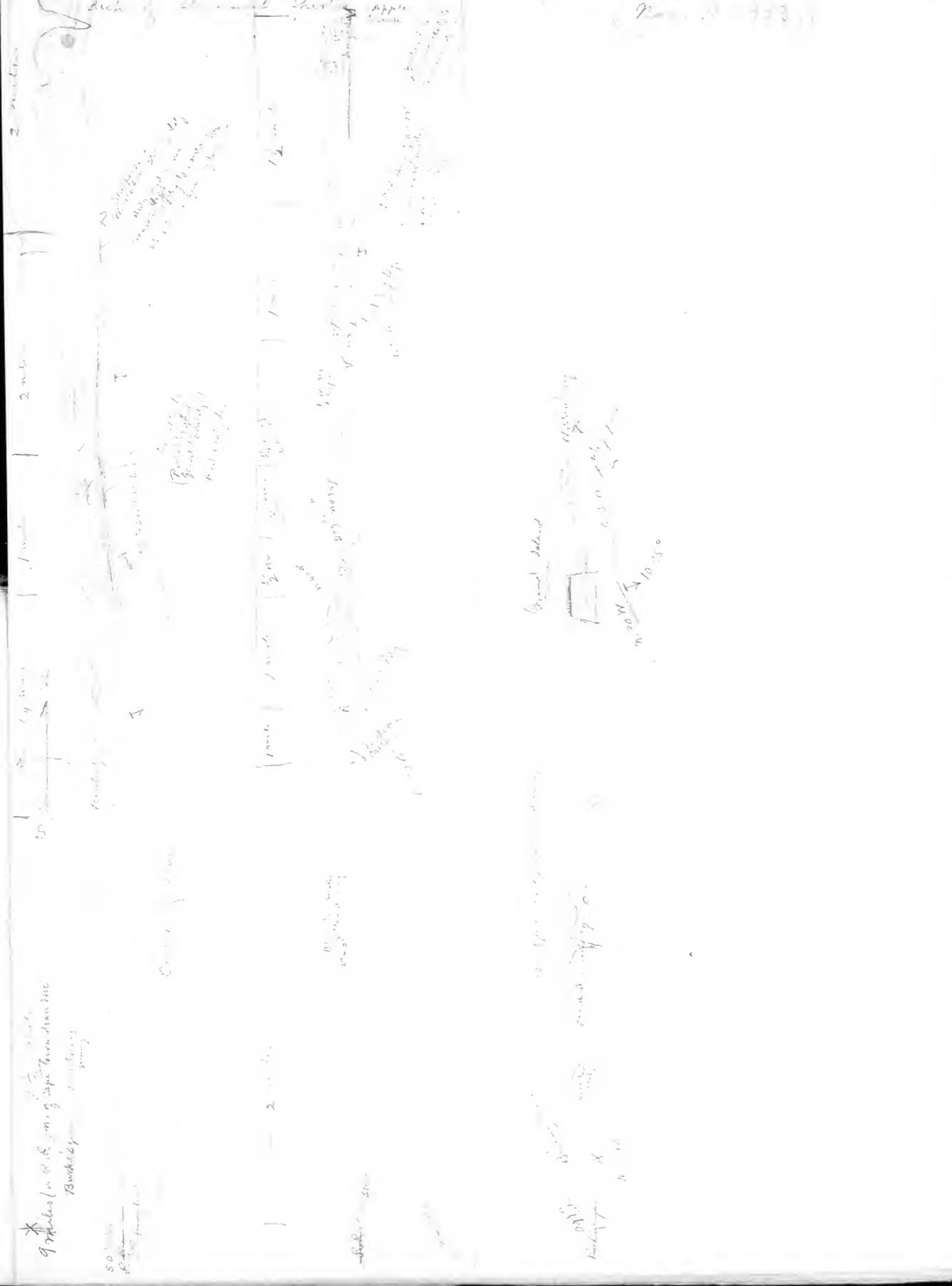
... ..

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Section of ... 9m. n. of Cape to W. ...



9 miles ...

... ..

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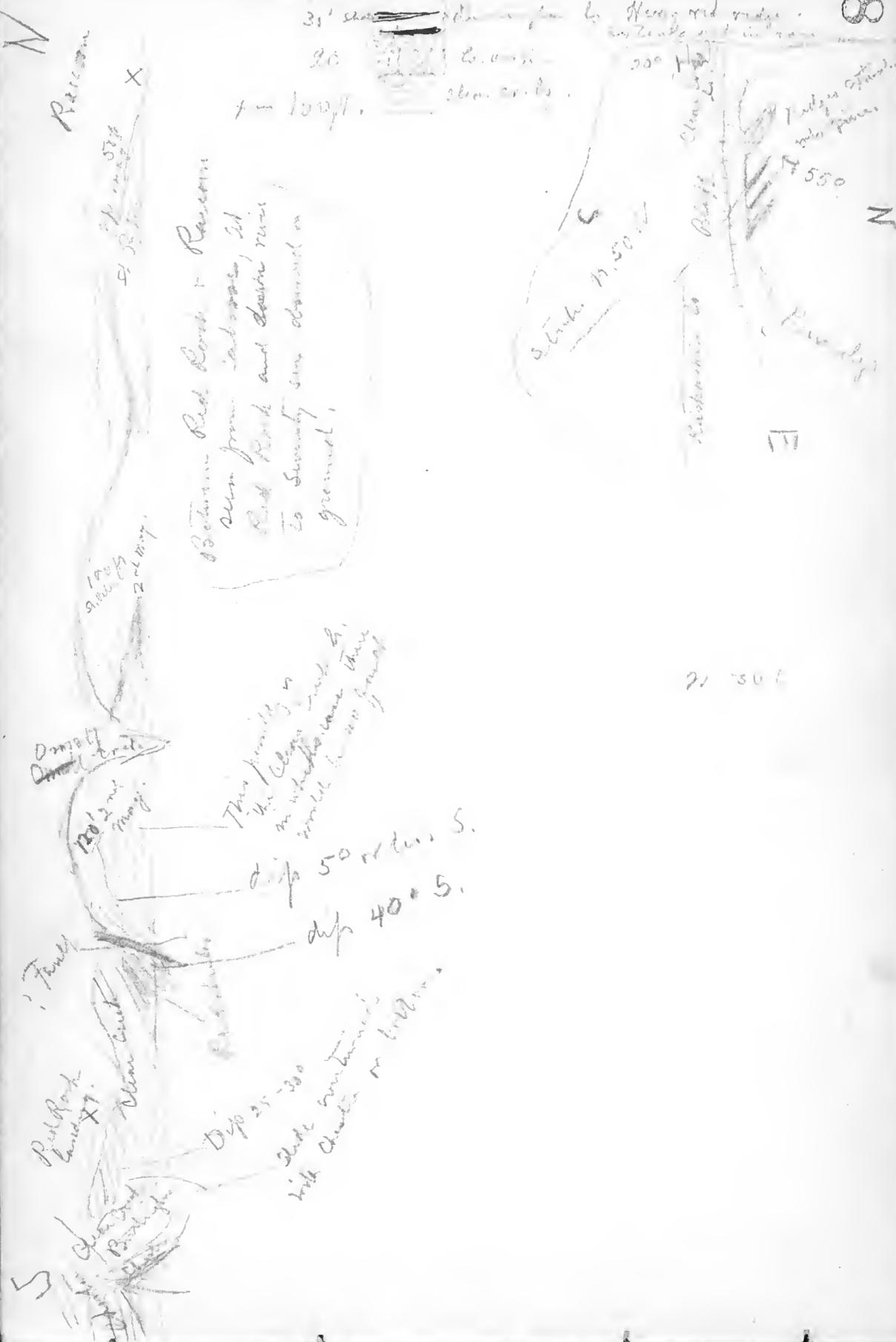
... ..

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... ..

Kaskaskia Chester { shale 70 ft. ...  
 70 ft. { shale 70 ft. ...  
 31' ...  
 20' ...  
 1-100 ft. ...



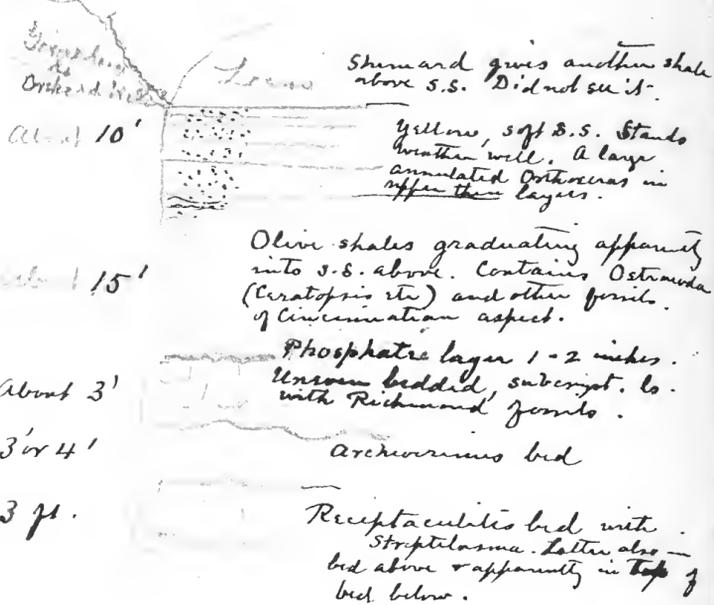
Between Bambrick and Nady's landing The Silurian rocks  
 are from 100 to 125 ft. above river in abrupt bluffs about 1/2 mile  
 for 5-6 miles. Lower 50 ft. is shaly, with red, purple green blue  
 colors, the first 1/2 of shaly. The upper 50 ft. is yellowish &  
 apparently more clayey than middle members, which is bluish.



Nov. 6 - 8. 1903. Ordovician rocks at and near Cape Girardeau, Mo.

Cape Girardeau ls. said to come above upper shale above s.s.

See Shumard's report for thickness (most part) of these formations.

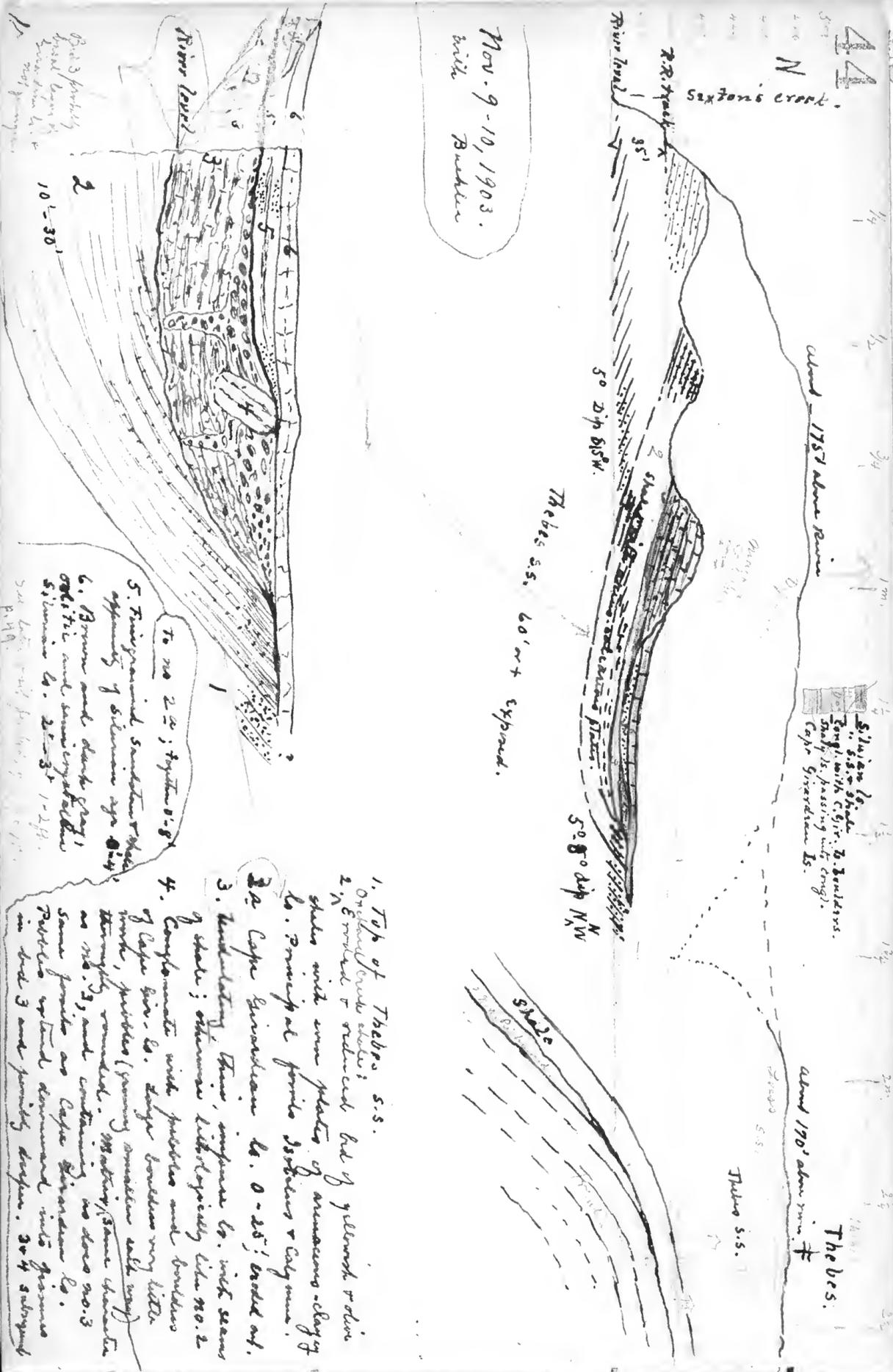


Shumard gives this formation a thickness of 130' in Cape Gir. Co. I saw only upper 50-60 ft. of it.

White marble with few fossils and these only of very great? (Lophotrypa acuminata) in very poor preservation. (white & cherty).

Lowers part of C. Girardeau section see G.B. 16, p. 60

Nov. 9-10, 1903.  
with Barber

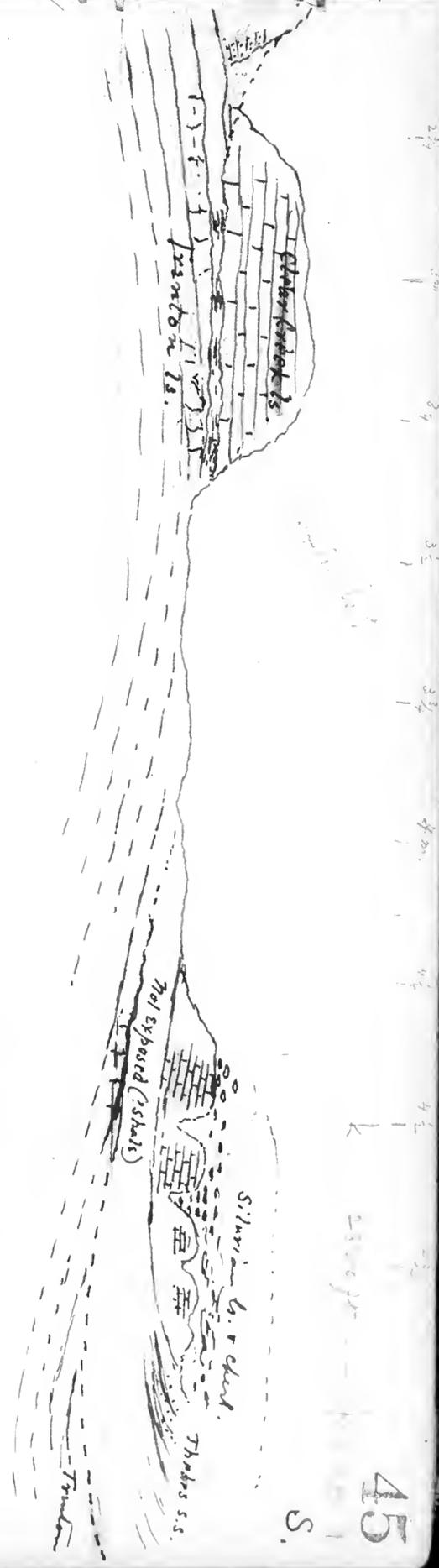


To no 2; typical 0-8'  
5. Fine grained sandstone with  
apparently of siliceous type  
6. Brown and dark gray  
argillitic and semi-crystalline  
siliceous ls. 2'-3' 1-2 ft.  
See later part of notes p. 44

1. Top of Thebes s.s.  
Ordnance shale;
2. Ordinance shale reduced but of yellowish or olive  
shales with some plates of massive clayey  
ls. principal fossils *Spirifer* & *Calymene*.
- 3a. Cape Girardeau ls. 0-25'; bedded out.
3. Underlying thin, impure ls. with some  
of shale; siliceous light colored like no. 2
4. Conglomerate with pebbles and boulders  
of Cape Gir. ls. large boulders very little  
matrix, pebbles (young massive with wavy  
fracture) rounded. Matrix/sand character  
as no. 3, and containing no more no. 3  
Some fossils as Cape Girardeau ls.  
Pebbles upland dominant with fragments  
in bed 3 and possibly *Spirifer*. 204 subjoined

Red Spruce  
Forest  
Lumber  
Lumber  
Lumber

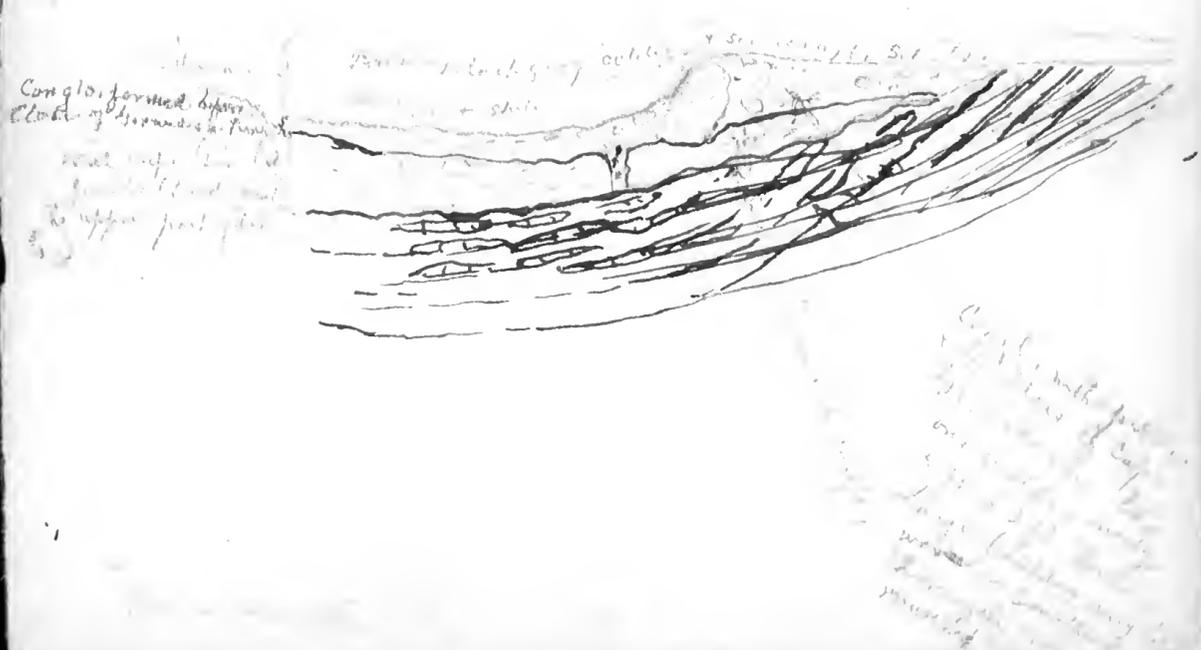
10'-30'



Everything that is green containing  
an abundant sprinkling of ortho-  
quartz in shale or limestone

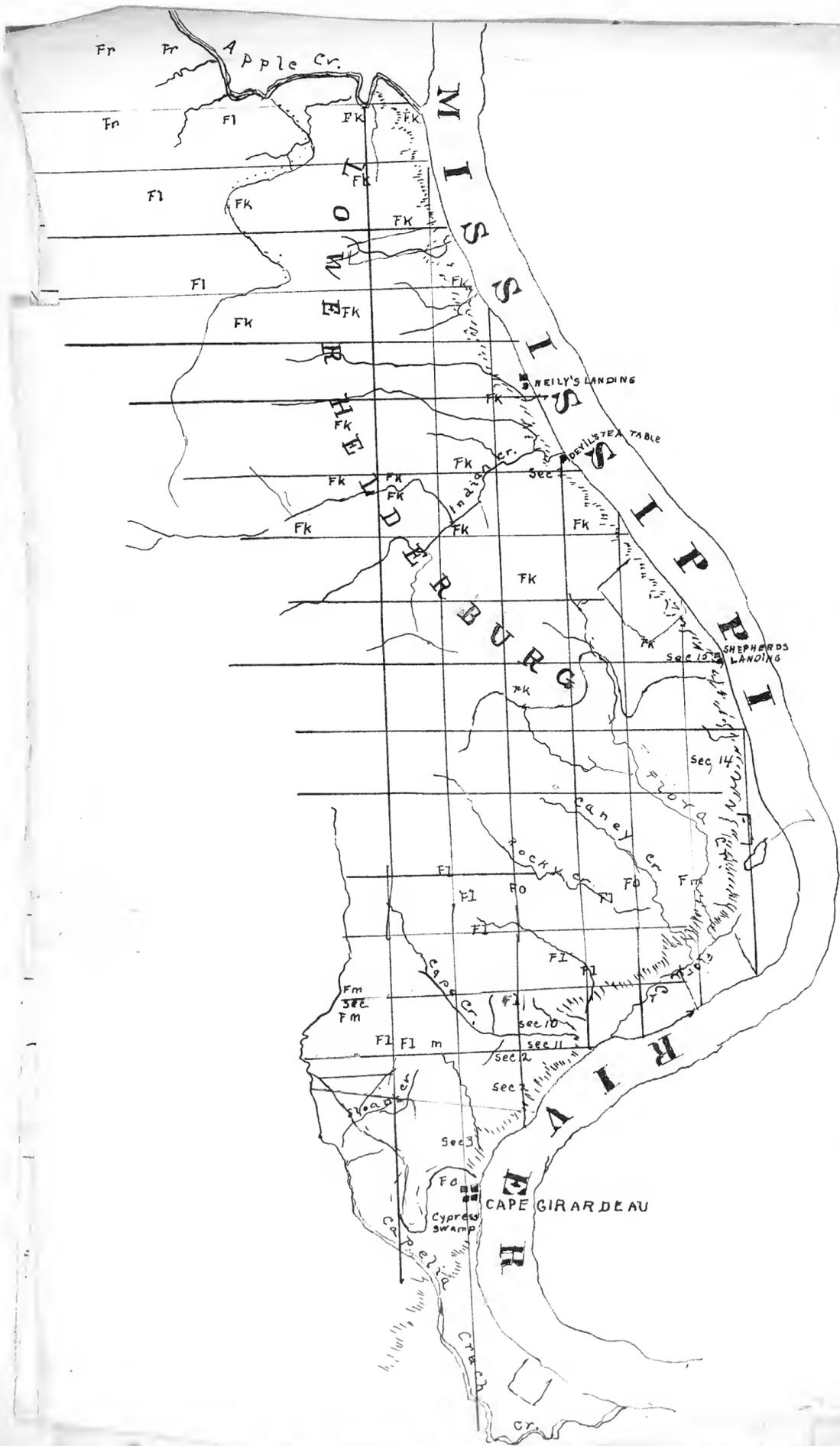
The limestone is  
very thin and  
is not exposed  
in the section  
shown here  
but is present  
in the bed  
of the river

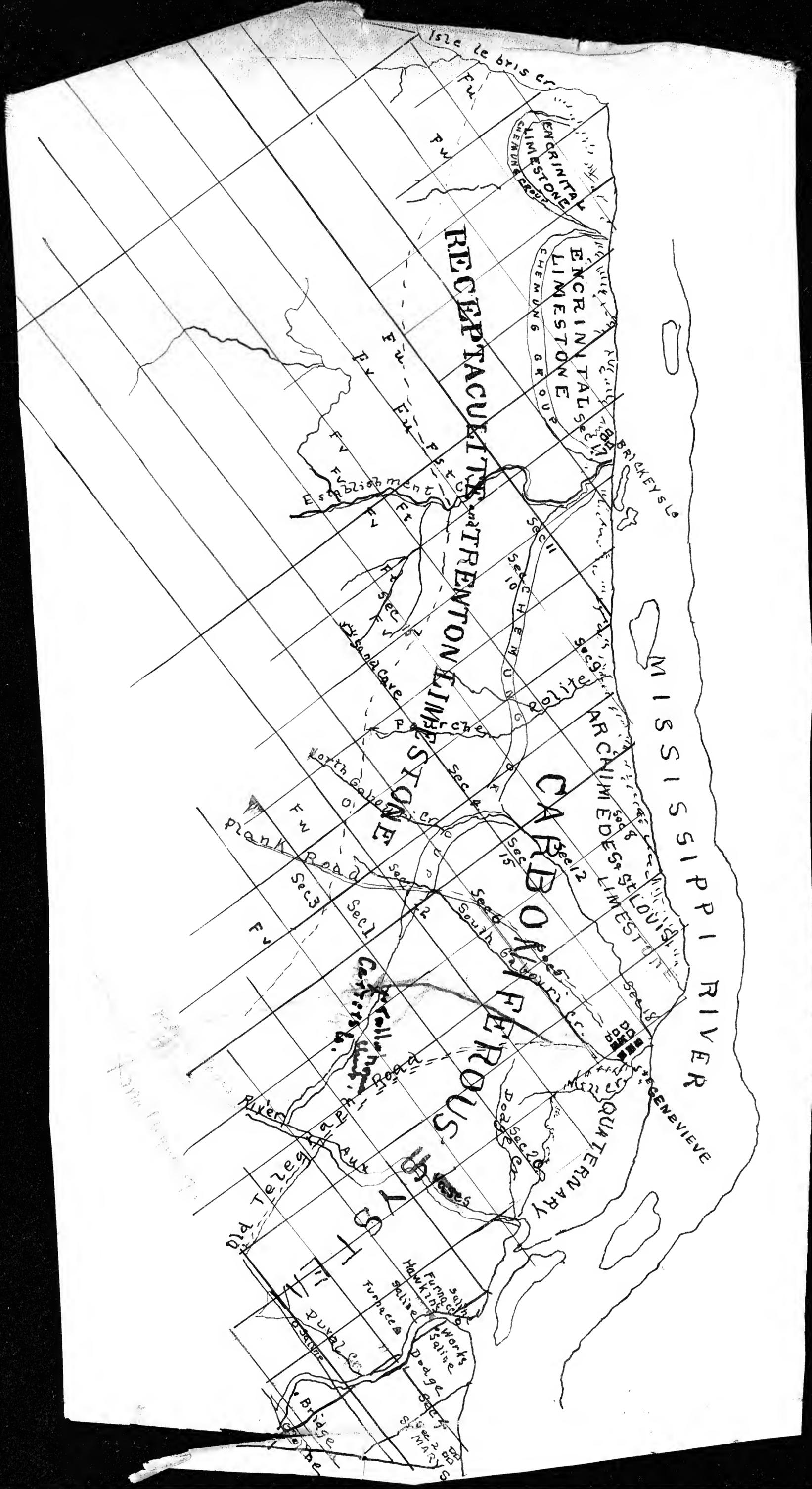
Nov. 9, 1903 - With H. A. ...











RECEPTACULUM TRENTON LIMESTONE

CARBONIFEROUS

QUATERNARY

MISSISSIPPI RIVER

ENCINITAL LIMESTONE

ENCINITAL LIMESTONE

ARCHIMEDES LIMESTONE

GENEVIEVE

ST. LOUIS

PLANK ROAD

TELEGRAPH

BRIDGE

ESTABLISHMENT

SANNAH CREEK

NORTH GATE

PLANK ROAD

TELEGRAPH

BRIDGE

ESTABLISHMENT

SANNAH CREEK

NORTH GATE

PLANK ROAD

TELEGRAPH

BRIDGE

ESTABLISHMENT

SANNAH CREEK

NORTH GATE

PLANK ROAD

TELEGRAPH

BRIDGE

ESTABLISHMENT

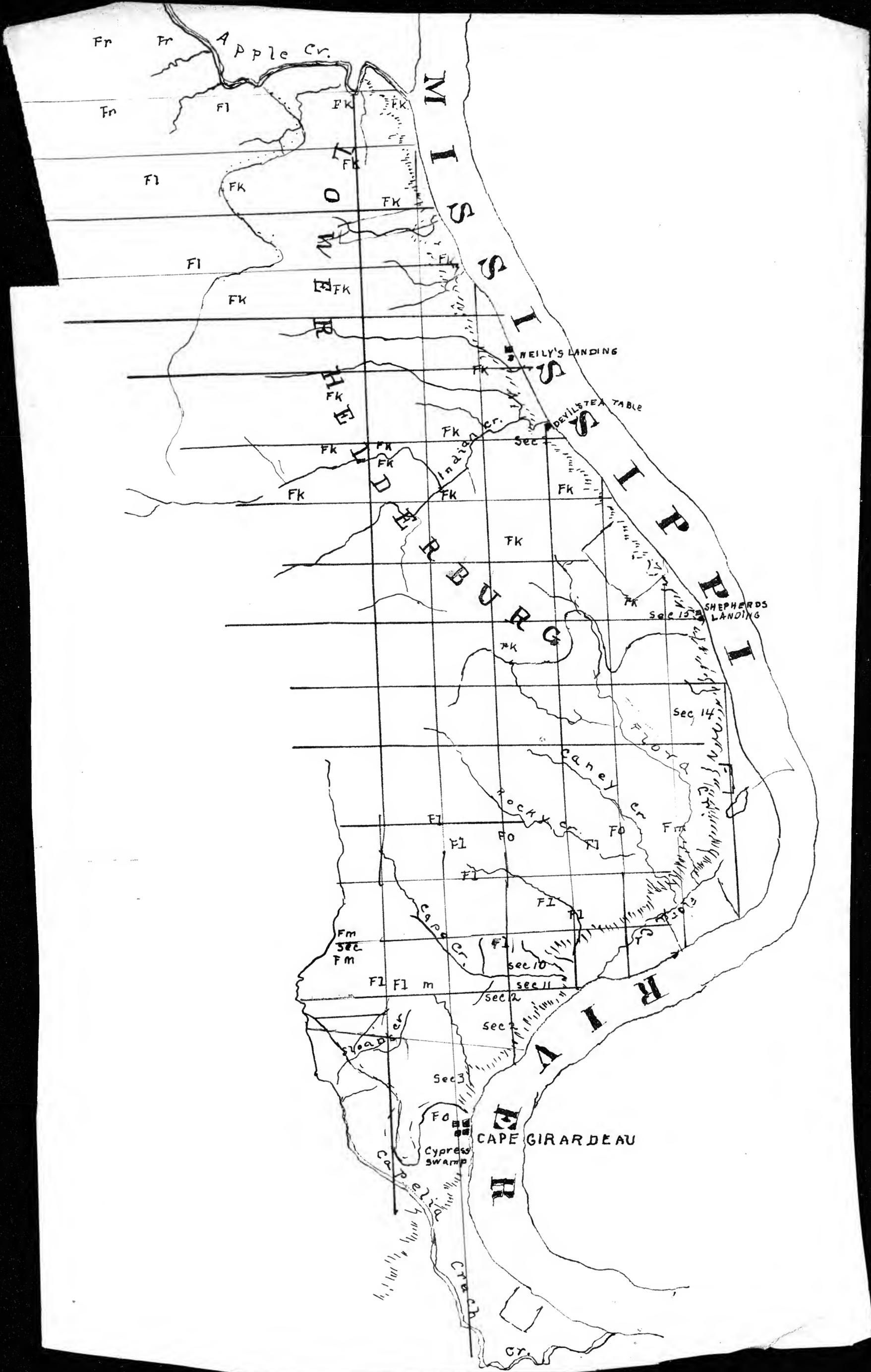
SANNAH CREEK

NORTH GATE

PLANK ROAD

TELEGRAPH

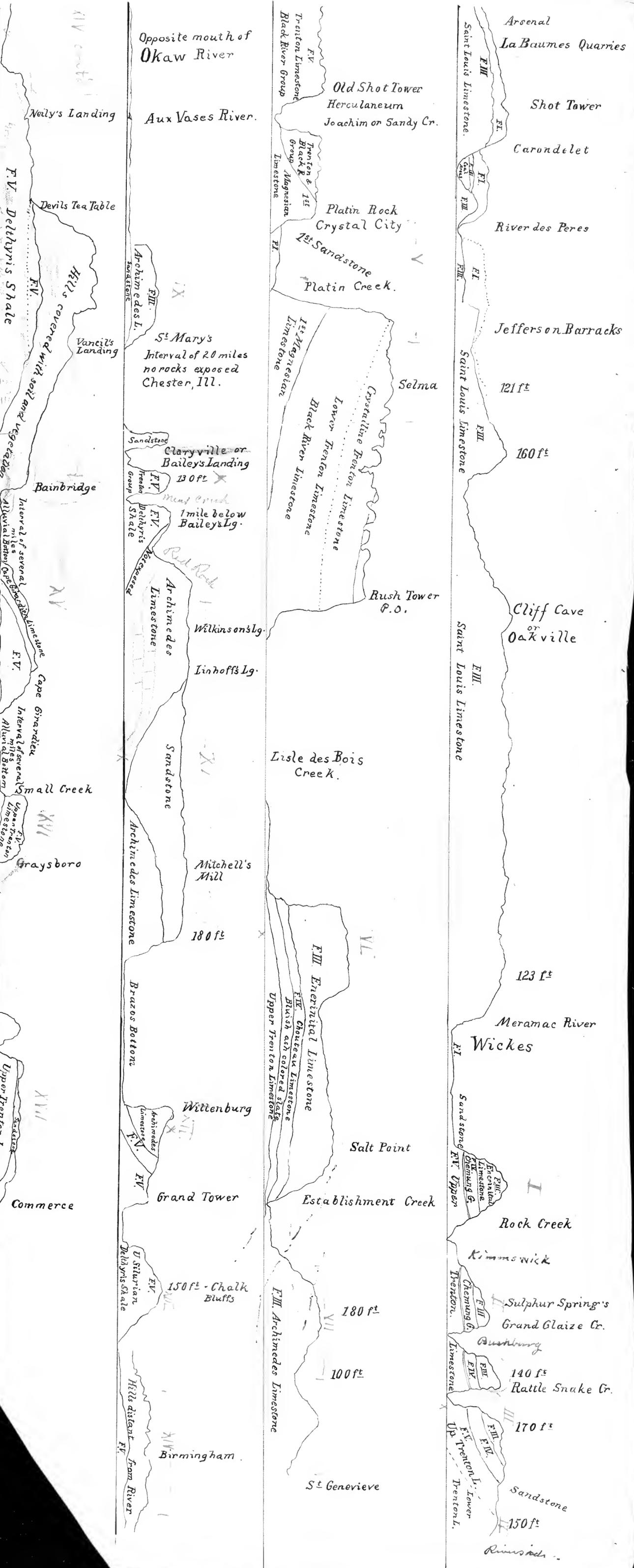
BRIDGE





Horizontal Scale 2 Miles to 1 inch  
 Vertical " 500 ft " "

*Section of Mississippi River from St. Louis to Commerce by Dr. J. D. Dana*

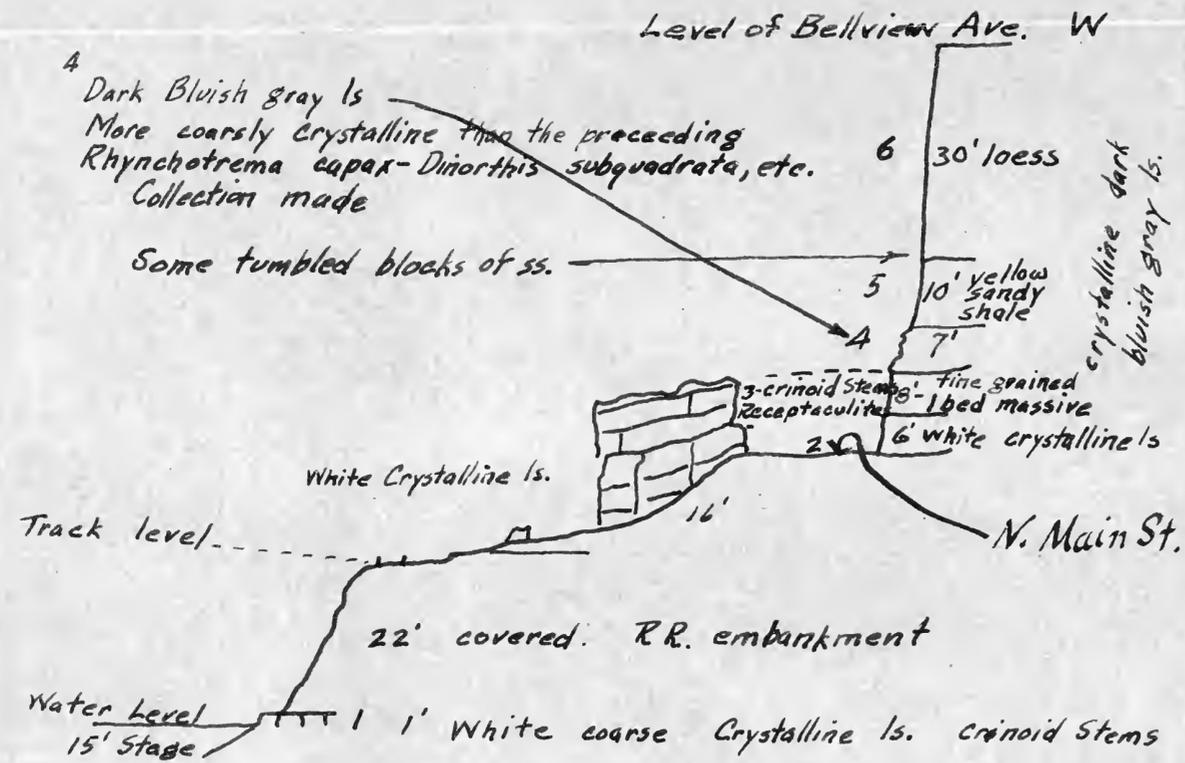




Section - East End Bellview Ave. to River  
 Dips Section about 5° NE  
 Direction of Section E-W

Analysis	6	Quaternary	
	5	Maquoketa - Thebes	10'
	4	Ferravale	7'-8' 15'
	3	Ferravale? <i>Echinoplurites</i> bed	8'
	2}	Kimmswick	44'
	1}		

42  
52



Mo. Geol. Survey - N.B. #658 -  
 page 5.

53

*quartzite*

*crystalline dark bluish gray ls.*

*100 ft.*

*60 ft.*

*ss.*

*thin shale with fine...*

*1' white coarse crystalline ls.*

*crinoid stems*

*Receptaculites*

*1' white coarse crystalline ls.*

*22' covered RR. embankment*

*16' white crystalline ls.*

*6' white crystalline ls.*

*7' fine grained bed massive*

*10' yellow sandy shale*

*30' loess*

*Dark Bluish gray ls*

*More coarsly Crystalline than the preceding*

*Rhynchotrema capax - Diorthis subquadrata, etc.*

*Collection made*

*Some tumbled blocks of ss.*

*Level of Bellview Ave. W*

*Track level*

*Water Level 15' Stage*

*N. Main St.*

*22' covered RR. embankment*

*1' white coarse Crystalline ls. crinoid stems*

*16' white crystalline ls.*

*6' white crystalline ls.*

*7' fine grained bed massive*

*10' yellow sandy shale*

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*Collection made*

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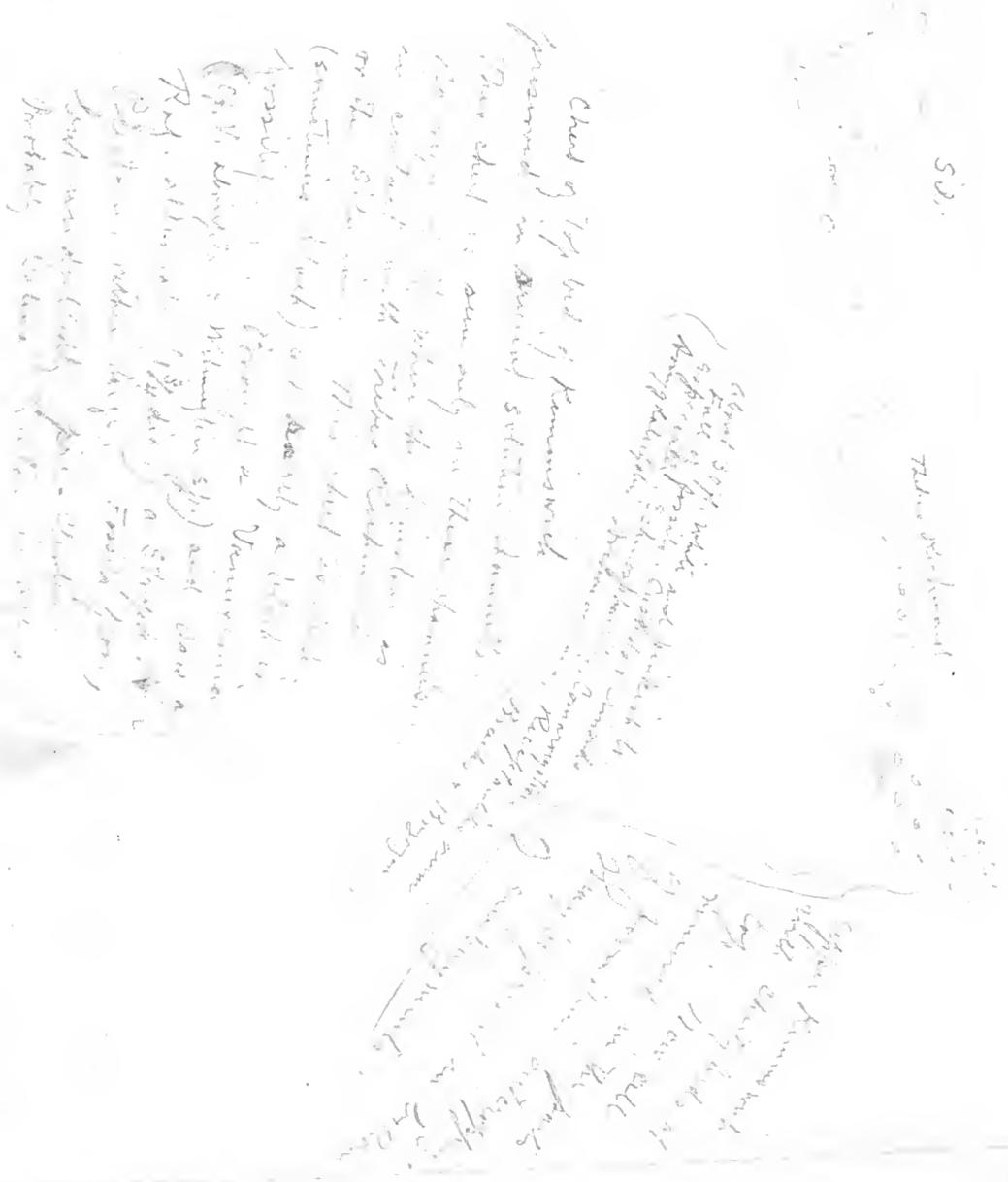




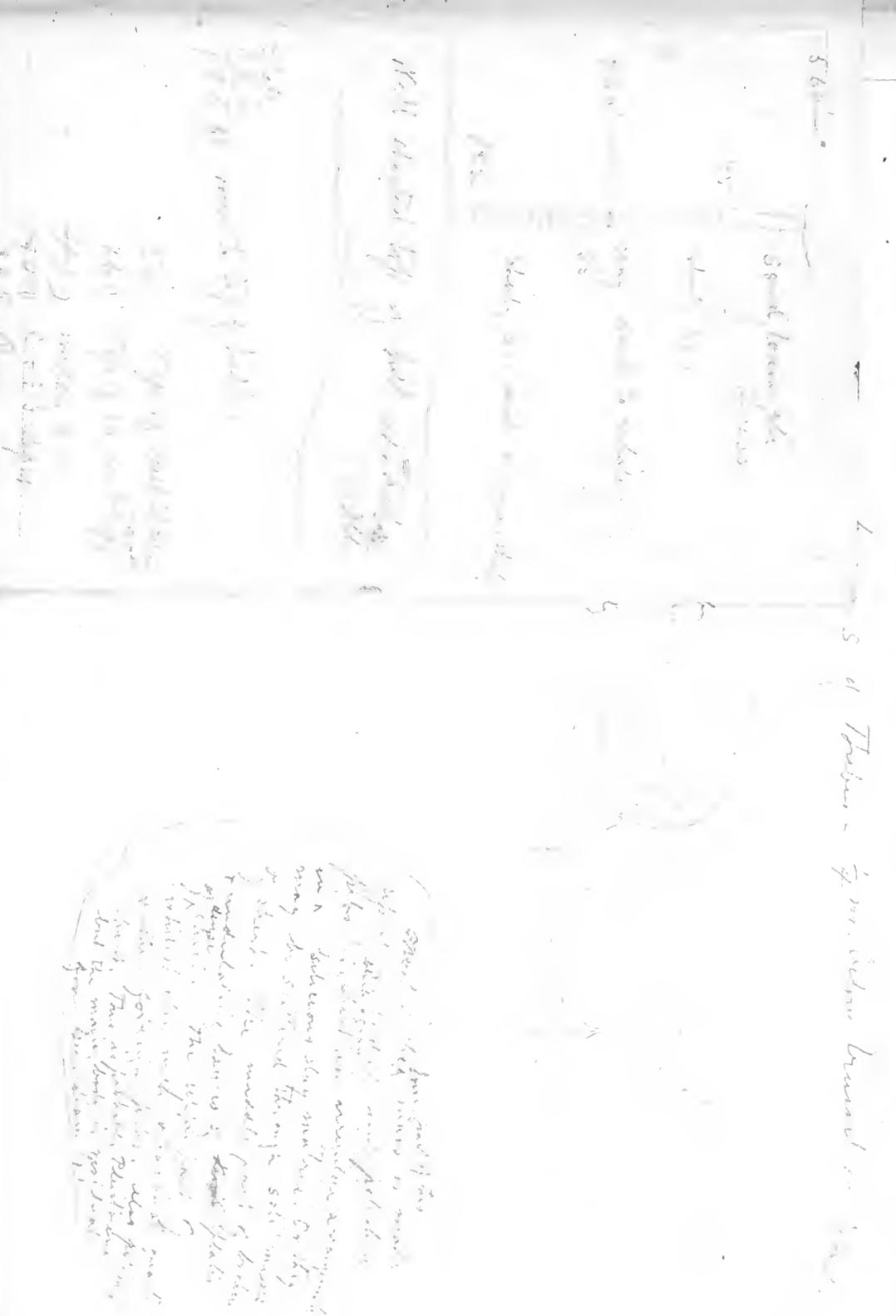
Sketches explaining presence of Ordovician  
sheet in solution channels and absence

of same in into channel areas, especially  
in RR into 1/2 mile south of RR bridge

(Note on Thibodaux area - Aug 23, 1937)



27m solution channel  
by Pleistocene  
Ordovician channel









A. H. Worthen's section at Montic Sana, near Huntsville, Ala. as published in amended form in Geol. Trans., p. 358, 1869.

Ferruginous s.s. with 4 ft. slate and impure coal at base — — — — — 34'

1 Light bluish-gray li. containing teeth of *Aspidodus crenulatus* N. & W. + *Pentre. goddardi* *Archimedes* etc 50'

2 Shaly li. somewhat cherty, containing *Sp. incruens* *Seminula subquadrata* etc mostly hidden under a covered slope — — — — — 100' - 120'

3 Compact, bluish gray li. semi-oolitic in part, containing *P. goddardi*, *P. pygmaeus* and *Archimedes* 250'

4 Ferruginous s.s. with fossil plants — — — — — 10' - 15'

5 Compact, gray li. with *Pentamerites* + *Archimedes* in abundance; *Zocrinus*, 2 or 3 sp., *Agassizoceras conicus*, *Productus cestriensis* *P. semireticulatus* etc — — — — — 200'

Decomposing cherty layers — — — — — 4'

6 Gray, cherty li. with some highly oolitic beds containing *L. canadensis* *L. proliferum*, *Spinifer strictus*? and joints of *Trinoides*, also *Productus ovatus*? + *P. semireticulatus* etc 150' - 200'

Dark bluish gray, siliceous rock, weathering to shale in some localities, with a few scarcely determinable fossil shells. 100'

Thickness of strata estimated.

groups  
Burdickville form  
Chert  
St. Louis li.

Coal Measures

Safford's (Ind. Terr. p. 356; 1869)  
 Section from Cowan, Tenn. to brow of Mountain  
 (Distance nearly 6 miles)

1000

Sandstone bluff at top 52', Shale with a thin seam of coal, 14', sandstone, with fossil nuts, calamites etc, 25' - 30', and local bed of sandy, ferruginous shale & hard sandy, ferr. rock underlain by bluish & brownish shale 12'

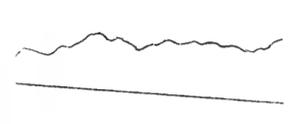
- 21. Limestone & sh.; not well exp. three ft. crinoidal li. seen at top; below it brown & red sh. doubtless with li. 85'
- 20. Li., blue & light blue, the latter oolitic — — — — — 32'
- 19. Sh. & li. in alternating beds; sh. greenish & bluish gray and brownish, and most abundant; li. finegrained, argill. gives conchoidal fract., breaks into angular fragments on exp. Old Bowers road crosses R.R. on this 70'
- 18. Li. rough, hard, rather thin bedded, dark gray, sometimes brownish; has cavities lined with calcareous quartz and some filled with gypsum. incl. a few layers of sh. 25'
- x 17. Li., blue, fossiliferous some oolitic. *Pentamerus pyrogonus* *Spir. incubescens* etc — — — — — 21'
- 16. Li. & sh. like 19 above. most of it thickbedded & decomposing readily, both forming glady places along sides of mountain. — — — — — 35'
- 15. Li., heavy bedded, lower part with cavities, some filled with gyp. 55'
- 14. Li. dove colored, argill., weathering in rough layers; contains cavities lined with crystals. 8 ft. of mid. pt. evenbedded, with a line of small chert nodes in one layer 28'
- x 13. Li. mostly oolitic, heavy bedded, light bluish, foss. near base *Archimedes*, *Pentameris* etc — — — — — 50'
- 12. Sh. & li. alternating. above argill. li. weathering to sh., containing cavities lined with crystals of quartz & calcite (8 ft.) below this blue compact foss. li. (6 ft.) then a li. weathering to dirty drab (4 ft.) argill. dove li. (3 ft) blue fossiliferous li (3 ft.) — — — — — 26'
- x 11. Shale, greenish & bluish — — — — — 12'
- 10 Sandstone, finegrained, micaceous & calcareous 8'
- x 9 Shale mostly; contains a few layers of li., one in its middle pt. 3 ft. thick & oolitic; fossiliferous 31'
- 8. Li. thickbedded, lower pt. dark blue & sparry; upper light bluish gray & oolitic; at top a ft. or two of thin li. & sh. abounding in *Archimedes*. whole mass very fossiliferous 13'
- x 7. Greenish shale, with bed of li. 3 ft thick four feet from bottom. mass fossiliferous contains *Botryna (Palaeotrypa) carbonaria*? McCoy 27'
- x 6. Li., mostly dove colored, some layers compact without fossils, others sparry, with them; at top a layer of bluish gray oolitic, 5' thick, which forms the ceiling of the Hoop & Chatt. R.R. tunnel at its western end. *Pentameris obesus* — — — — — 32'
- x 5. Li. knotty & argill. weathers into knotty lumps & sh. lower layers contain *Archimedes* — — — — — 9'
- x 4. Li. mostly thick bedded, much of it oolitic & light colored, some crinoidal, other beds compact argill. contains the common *Pentameris* — — — — — 70'
- 3. Li. blue, thin bedded, with cherty seams; fossiliferous 8'
- 2 Li., gray li, with a trace of blue — — — — — 20'
- 1 Li. alternating beds of gray oolitic and dove colored, or blue argill. li. — — — — — 57'

704'

Lithostrotion bed or St. Louis limestone  
 cherty li. very fossiliferous, to creek at Cowan, and 110'



Gap  
 Trenton L.  
 Sandstone



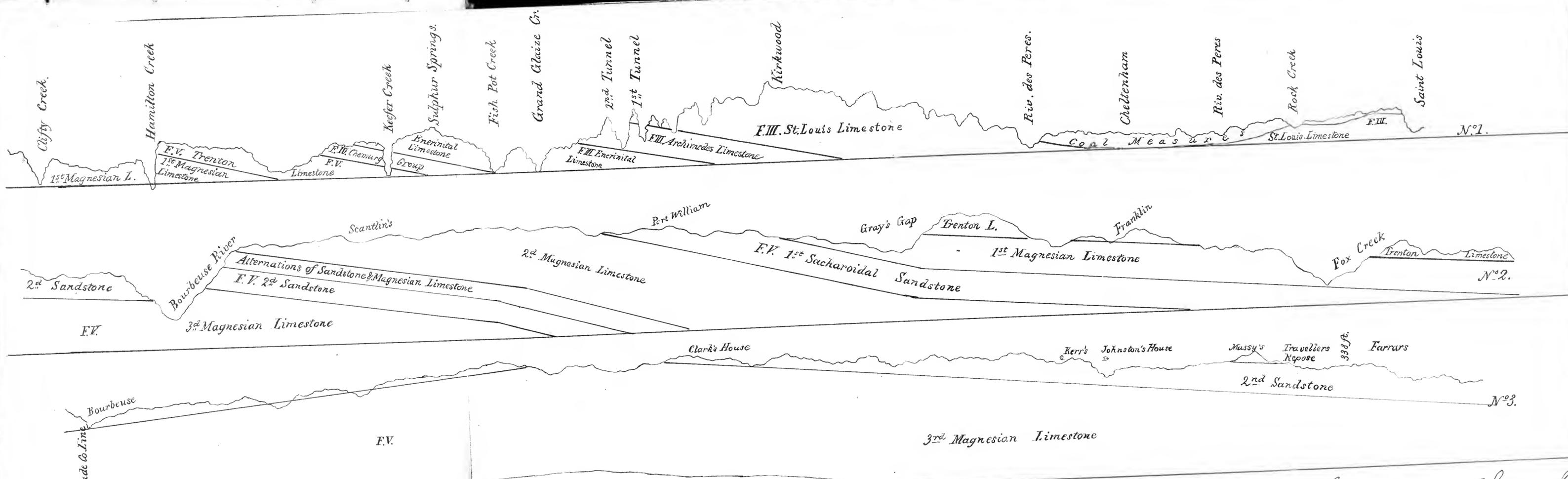
3<sup>rd</sup> Magnesia

m St.  
 due m

2000

1000





Geological section along the line of the Pacific railroad from St. Louis to Gray's Gap: thence S.W. through Franklin County, near the line of S.W. branch of P.R.R. thence due west to Gasconade County line.  
 by B. F. Shumard.

