

1212

JHEM

Note Book 12

James H. C. Martens
Florida Geological Survey
Tallahassee, Florida.

February 1929

7030

8100 to 8135

537, 8140, 4142, 43, 49, 50,

Soil Survey

Penny - Swain Farm

Stallings

4th bunch of mail boxes,
 $\frac{3}{4}$ mi. left hand road

Capt J. S. Blitch, prison farm Sept.

Feb 8
Clay Co.
Green Cove Springs

2

change
to 0-229

0-198

~~2-198~~

At what side
Near the corner of old workings,
following section is exposed in bank.
Immediately west of this is a level
field.

Sand - gray and grayish yellow 2 ft
Clay - spotted with yellow and red 3 1/2 ft
Sand - top only sand - thickness
not known

The clay here is the blackest
contains the least amount
of sand of any place seen here
in these pits.

These or four hundred feet N and perhaps
a little east of 0-198 the following
section was measured by digging up
the old bank and digging 3 ft at
the bottom. This is near the
extremity south end of the workings
and was then 100 ft from the top of
the branch.

	Soil, fine light gray sand somewhat yellowish at bottom	15 inches
0-199	Clay, rather sandy, mottled gray and brown	4 ft
0-200	Clayey fine sand, mostly reddish brown, some gray	3 ft
8100	"Shale" sand, light yellow to nearly white, rather fine, bottom not reached	2 ft

No doubt that material is here not
disturbed by previous excavations

Feb 8
Clay Co.
Green Cove Springs

3



Drawn very roughly. Scale is
same as early 11 square = 100 ft.

Old pit, sand rather irregularly only
6 or 8 inches. Banks are carved in
and covered with vegetation. Grass
up to 6 inches and more growing in
bottom of pit. On account of
poor exposure and weathered conditions
hardly better of overexposed which it
is not always easy to tell from the
undisturbed beds. It is difficult to
make out much about the real
stratigraphy. However, I think
the clay is running up. Perhaps
and the amount of sand is enormous
and the overburden is also variable
in thickness.

Main part of town is south of this
sketch.

Feb 8
Clay Co.

Green Cove Springs
to Russell

132

4

On south side of a small swampy creek
(the first creek N of Green Cove Springs)
Ditch along roadside shows 2 ft or
a little more of brown clay with
good flint, occurring directly
below the surface. Except for
the color which is evidently
of weathering and action of vegetation
it seems about the same as that
at the brickyard. North of the
creek ground is a little higher.
Road cut shows 5 ft of nearly
white fine sand with orange
slightly clayey sand below it near
the bottom of the exposure.

Crossing Peters Creek on road
W of R.C. R. Cut to 5 ft depth
on S side of creek shows only loose
light colored sand & light gray
to brown color. Barren pit on
N slope of valley shows.

Loose, fine, light gray sand 2 to 3 ft.
Moderately clayey orange sand 3 ft.

The boundary is fairly sharp but I
think it is due to weathering. Further
up the hillside the thickness of the
loose sand on the surface increases.

On S.W. side of branch of Peters Creek
0.9 mile NW of Sells small borrow pit
shows to 14 ft of clay, mostly gray
but from which show weathered
Overburden from 2 ft upwards of
fine gray sand. Lower contact of clay
seems to be question. In part of the
pit orange sand shows below clay and
where clay is decreased in thickness.

Feb 8
Clay Co.

Green Cove Springs to Russell
road on W side A.C.L. Ry

5

Road side ditch 200 ft north of upper
end of Rock Creek, in flatwoods shows
following section.

Gray sand, top soil 6 inches.
White sand 12 to 18 inches.
Hard pan 15 inches.
Compact clayey sand, mostly gray 12 inches.

Nearer the creek the hard pan
disappears from the section, owing to
better drainage, while the clayey
sand at the bottom is more deeply
cut into. I think this is all
Pleistocene.

Feb 8
Clay Co.

83.3

Russell Brick and Tile Co.

6

D. Mozier, Russell, Manager
Brick yard at Russell on A.C.L. Ry

2 Score kilns

Plain stuff mud, and cut brick.
Brick are first dried for at least
ten days in a shed enclosed on
sides as well as on top. They
then are covered with sacks also
to prevent too rapid drying. From
there they are transferred to sheds
open on the sides to complete
the drying.

They have not been working since
before Christmas because of the
firing broken. They say they have plenty
of orders - enough to keep going
all summer.

Some of brick cracks in spite of
precautions taken. I think difficulty
is partly from clay and sand not being
thoroughly enough mixed.

Clay pits are 1 mi to NE in flatwoods.
One worked present is on west side of
a small branch of Black Creek.
A small abandoned pit on east side.

Overburden 1 ft of top soil and sand
removed.

0-202

Clay dug to depth of 6 ft below
overburden or perhaps slightly more
since there is a little water in bottom
of pit. Mostly gray, a little brown and
orange. Very sandy. Can not see
any bedding but amount of sand
varies from place to place.

Clay is hauled from pit in small
cars on tracks.

Feb 8
Clay Co.
Russell to Rideout Ferry 7

3 mi NW of Russell
200 ft W of crossing Mill Log Creek
by graded public road, small
exposure of gray sandy clay like
that of Russell Black and White Co.
1 ft gray sandy soil
1 ft clay - bottom of ditch

2.1 mi NW of Russell, crossing valley
of Bradley's creek, road seems not to be
shown on map being between Black Creek
and the one on the map.

Road cut on N. side Bradley Creek about
400 ft from the bridge. - Section.

Loose gray sand 3 ft
yellowish brown clayey sand about 6 inches
grading clay like
Clay, mottled gray and red sandy 2 ft,
fairly sharp contact.
Red clayey sand 2 ft.

The clay appears as a clay exposed
for only 14 ft along the roadside.
On the downhill side it has been
eroded away or being mixed with
the overlying clay while on the
uphill side it pinches out
and clayey sand appears at the
same level.

On the slope S of the creek or rather
southeast clay shows in roadside ditch
for horizontal distance of 150 ft
through a vertical distance of 7 ft
(6 to 13 ft above level of creek)
May vertical thickness exposed at
any one point be more than 40 ft

Feb 8
Clay Co.

(continued) 8
should not be assumed that the
actual thickness is more. No bedding
can be seen. Overburden very
small, averaging for all this distance
of 150 ft only 1 ft of sandy soil.

Rideout Ferry

Road cut going down hill on S. side
of creek shows mottled clayey sand
and sandy clay. Little of it has
sufficient plasticity. Mostly sand.

From Russell in general westward
direction 5.0 miles on graded road
to beginning of fenced land of Penny
Farms. No clay seen in this interval.
Soil is all sand. A considerable
part of the way it has enough
relief so that it is dry black
jack oak land.

Turned south and came into
the Stacker - Greek Springs
road. About the same kind
of country along this as on the
road west from Russell. Where
this road cuts through a small
hill just east of crossing what
I suppose to be Governor's
Creek 7 ft of clayey sand
with some thin streaks of clay
is exposed.

2.5 Clay Co.
Feb 8
(Labels dated Feb 10)
Gamble and Stockton 9

Gamble and Stockton
about in range.

9 ft down draft hemispherical valves,
coal fired.
These sandy brick very badly formed
on corners.
One lot of brick coming out of dryer
is practically all warped and cracked
so as to be rejected.
End cut - small separate machine
belong die 2 under pressure.
Defective brick ground up for grog.

Brick are set on the broadest side.
Die oiled under pressure. Otherwise
would wear badly.

Raw brick made by scratching
on three sides and rolling down
scratches. Same machine as for common
brick.

Grog is mixed twice with
clay before going into pug mill
or whizzer. It is that for clay
through die.

Drying in several stages by carefully
regulated artificial heat.

Drill the soap pressure at will was
18 lbs.

Pit is connected with brick works
by electric railway.

4.2 to 4.6 "brass"
4.1 to 4.3 "brass"
4.9 turned off
5.3 Bled out

Clay Co.

Feb 8

Gamble and Stratton

10

Clay is excavated by dragline.
Practically no overburden of grass
and roots are removed in part.
No definite ditches can be seen.
Generalized section of pit.

0-203 Gray sand 6 inches
Sand and sandy clay 3 to 4 ft.
Average color is brown. Contains
a large proportion of gray. Some red.

0-204 Gray slippery clay, very little sand 8 ft.
Dragline operator says clay goes from
4 to 8 ft deeper than bottom of pit
with sand below it.

0-203 Is the material which
is made into brick separately, dried
and ~~then~~ ground and used for grog.
Will stand more rapid drying than
no attempt is made to avoid defects
in drying; even brick are not
to be used as such.

0-204 Has some brown streaks and
stains. Parts are of the color
commonly described as "blue" when
referring to clay. High shrinkage.

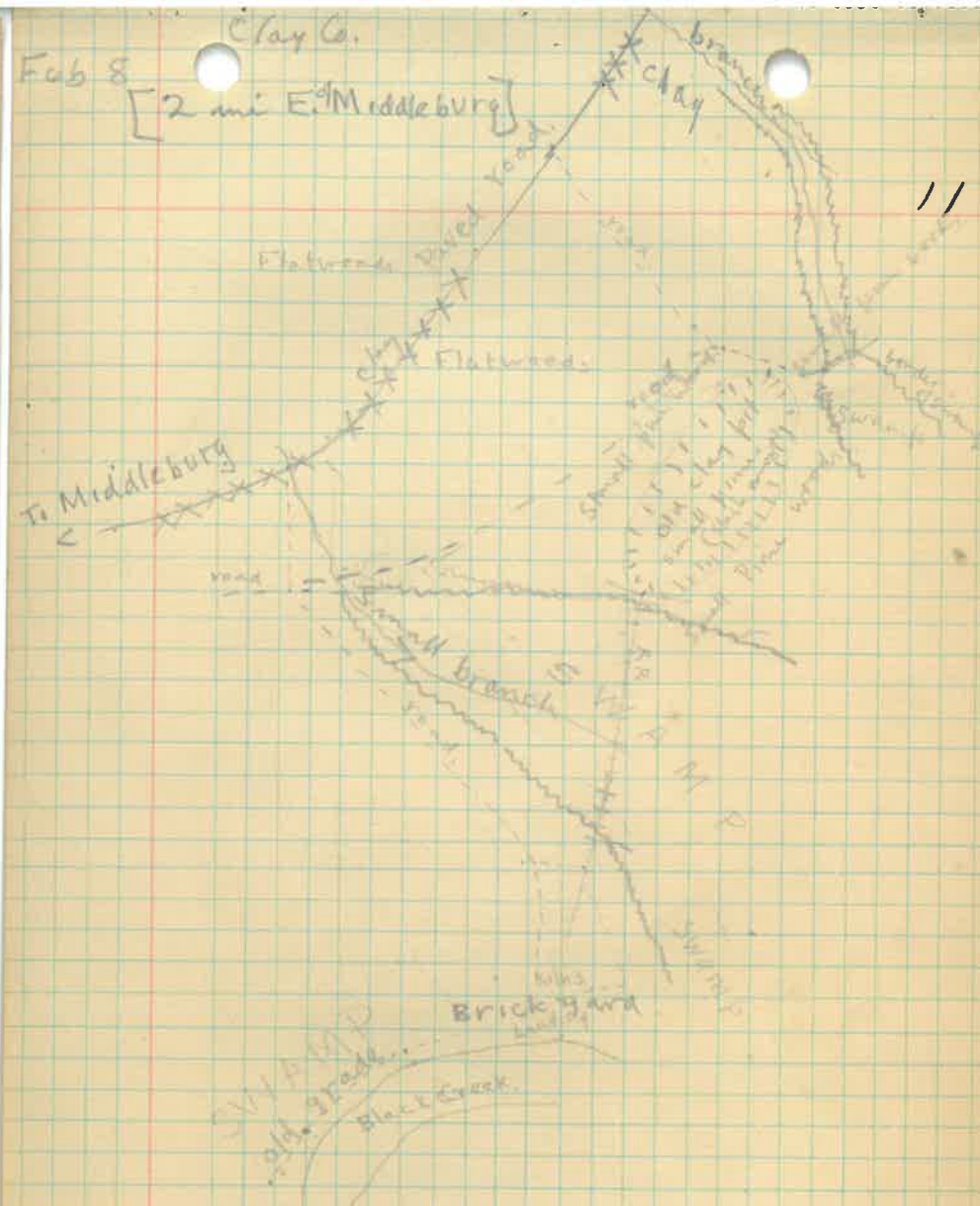
The thickness of the five days
given in the section indicates about
the proportions in which they are
mixed.

0-205 Reserved for mixture.

Feb 8

Clay Co.

[2 mi E. Middleburg]



The place used is four steps about 10 ft on
ground of average steepness.

boundary of Swamp
Scale 1/4" = 10 paces

Clay Co.

Feb 8

old clay pit 2 mi E. Middleburg

12

Ground is lowest at N end and West
side. Section at N end of pit.

Soil 8 inches fine gray sand
0-206 Clay, brown, friable sandy 2 ft
0-207 Clay, dirty brown, gray 5 ft
Very tough, little sand

Bank on W. side shows in places
more sand above the clay. However
it is all fine sand and a large part
of it clays so it is probably no more
than labeled as gray with the
clay. It is well drained. No
water in it.

On Sax - Middleburg road,
going up hill S. of crossroad fork
Black Creek cut bank and
gullied ditch give 15 ft section.
2 or 3 ft loose gray sand at top
below that also all sand to bottom
Mostly orange and fairly compact
with small amount of clay. Soil is light
gray to white and plastic. Part of this
bank is sandy at the soil stratum
as the clay outcrops to the NE but
no clay appears.

At Middleburg went about 1 mile
W to where that land begins a
distinct rise. Went ENE to end
of road on shore of N Fork of
Black Creek. This is all fine
loose sand on top. A small
exposure of sand clay going down
hill to S. Fork of Black Creek
on continuation of road coming
in to Middleburg from Jacksonville.

Feb 9

Clay County

13

- 0.0 Green Cove Springs Sta.
 0.5 west on paved highway, distinct
 rise from flatwoods (lowest terrace)
 into dry sandy land
 0.7 turned south on Highway No. 3
 1.5 down hill into flatwoods again
 10.7 in this interval continued nearly
 straight south on Highway No. 3
 mostly sloping and sharply dissected
 country. Somewhere nearly equally
 divided between flatwoods and (dry)
 black oak oak land, little swamps.
 Apparently nearly the water level off
 the second terrace since the land
 can be seen to slope distinctly down
 to east and nearly level to west.
 Fine sand all the way, white to
 gray to yellow depending upon drainage
 conditions. On the south side of
 Charlie Creek, going up the hill by the
 road has cut through the top of the
 three foot cover of surficial fine sand
 and into a brown or orange sand,
 with thin streaks of clay.
 at 10.7 turned east on graded but
 not surface road.
 11.4 - down hill into level wet flatwoods
 probably the lowest terrace.
 11.6 came out on paved road - turned S.
 13.9 West Tower
 14.6 Creek
 14.7 end of paved road
 15.0 crossing R.R.
 south along R.R. through
 flatwoods. All ditches show sand.
 19.6 Brook with paved road begins

Feb 9

Putnam Co.

14

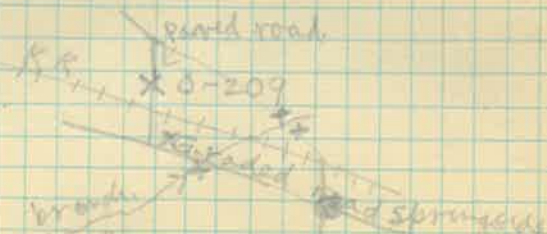
- 19.6 Brook with paved road begins
 turned E. on
 broad paved road out to landing
 at Bridge Point. Low flatwoods
 all the way. Sand in ditches.
 At Bridge Point flowing with
 strong sulphur water, rises at least
 10 ft above St. Johns R.
 Brook with to Rice Creek on main
 highway along west side of R.R.
 Ditches show only fine sand.
 Mostly flatwoods.
 After Brook and Tule Cr.
 Rice Creek.
 Old pit on N side of Rice Creek
 between Fitch R. and Highway.
 Rice Creek station no longer exists.
 Pit is full of water almost level
 with the surrounding country and
 the site of the brickyard probably
 overgrown with brush. No trace
 whatever can be seen of the clay that
 was used. Brick lying around are
 rather sandy.
 On highway directly west of old pit
 ditches 3 ft deep show only yellow
 sand.

Feb 9

Putnam Co.

15

- 0-209 Clay - spring side 1/2 mile NW
 of station



- In ditch along paved road for 500 ft
 or so above directly north of R.R.
 crossing. (This is a new road west of Little River)
 section taken and shown in map.
 Soil dark gray loam 8 to 12 inches
 rather sharp boundary
 0-209 Clay, gray spotted with yellow 4 ft.
 Actually only 1 ft of clay or a little
 more is exposed in the ditch, but the ft
 depth failed by post hole digger and
 represented by sample.
 Clay is exposed at about 15 ft. station
 according to topographic map. It is the
 same as the clay sand exposed
 in ditches.
 On old road goes through the main
 part of town of Shamalake. Clay then
 to 2 ft depth in roadside ditch
 100 ft N of station.
 From Springside to Palatka on
 newly graded road follows closely the
 Georgia Southern and Florida R.R.
 Ditches show only sand. In places
 from Palatka to Rice Creek on
 Highway No. 3

Feb 9

Putnam Co.

well at N. side of bridge - Rice Creek. 16

Mr. Tolman's well

176 ft deep

flowed good stream

If the old Herman Brown brickyard is on Rice Creek it can not be in section 16. At store at Rice Creek they say it is reach by road starting north of Rice Creek, so it must be abt north of. I do not see how it could be on navigable water. Crossing Sims Creek and Etowah Creek I got about the locality given by Bell they are so spread out up the swamp that they would not be easily navigated by rowboat.

Feb 11

Clay Co

Green core springs to Shands Bridge x
Shoalwoods and coastal Hammock
strip x Only sand exposed as far
down as ditched go 17

Feb 11

St Johns Co.

Small bluff at east end of Shands
bridge shows only sand. 18
Turned N at E end of bridge on
newly graded but not surfaced road
to somewhere about New Switzerland St.
this follows the shore of the river
rather closely most of the way.
Partly with coastal hammock
which is a narrow strip of oak
along the shore and partly in
the flatwoods in back. Dabbs
cut as well as shallow (moss bed)
show sand. A very clayey sand is
very scarce. Mostly light to gray
sand with very little clay.

10.2 mi from Shands bridge crossed
Cunningham Creek. No cabbage palmella
seen to this time.

11.6. Turned east on paved road

18.3 crossed Durbin Creek - this interval
is mostly flatwoods with hardpan
above. No clay.

Came out to F.E.C. Ry and Dixie
Highway a mile or two north of
Durbin. Long R.R. cut north of
Durbin station shows hard pan
sand.

From Durbin to St Augustine
swamp much of way. No clay
could be seen.

Feb 11
St. Johns Co.

19

From St. Augustine out toward SW
on paved road

Until passing deep creek near
Hastings no sign of any clay along
this road No. 14

6-240

Hastings Clay. about 500 ft W of
deep creek bridge on highway No. 14
Following section in ditch and hole
dug at bottom of ditch

Soil, fine sandy loam 12 to 18 inches
clay mottled gray and brown 4 ft
getting very sandy and grading into a
sand at bottom

The clay is fairly sandy all the way
down but the upper three feet of
it has enough clay content to give
good plasticity

Potatoe fields on each side of
road

1.4 mi E of Hastings Station

Clayey subsoil occurs rather generally
in the area around Hastings mapped
as the Bladen fine sandy loam
mostly of smaller drainage ditches
barely reached through the surficial
gray loam. Some of larger ditches
in south part of town of Hastings
show a yellowish clayey sand
in lower part but no real clay.

Considering this fact and also the
small thickness of the clay where
it does occur it would seem that
very thorough prospecting is necessary
before locating any clay workings
in this district

Feb 11
St. Johns Co.

20

0.6 to 0.7 mi NW of Hastings station
along road to Federal Point on (other)
side of Crocker Creek ditch shows
mottled yellow and gray clayey sand
fairly plastic but too much sand
to make brick good for anything & this
may be the usual type of subsoil
referred to as clay

Starting out of Spuds to north
on newly graded wide road
at 2.5 mi N of Spuds on S. Side
of Mossy Branch gullied ditch
shows 7 ft of fine loose sand and
still in sand at the bottom

19.2 Ruerdale
flaming well directly across road
from post office
Bluff on either side 4 or 5 feet high
shows mottled gray and yellow very
sandy clay in lower part below
surficial gray sand

21.0 Toca - end of road from
St. Augustine

From Ruerdale continued in general
northerly direction along new graded
road to east end of Shands bridge
& large part of the way the road
is at the base of the ridge & it
cuts off some of the front end
so gets a short distance inland
sand only seen in cuts all this
distance. No need to describe the
country since it is on the soil map

Feb 12
Clay Co.
Penny Farms.

21

- Thompson -
E. W. Russell
- Rainey
Pruitt

Engineer C. T. Furley - main office (600) ft to
administration building (900)
well at dairy

well at water works
water 14 ft below ground
Section 16 T 6 R 25
supposed to be between 600 and 700 ft
total depth
ground elevation about 92 ft
pumping at rate of 10,000 gal per
hour. Lower water only about 2 ft
M. M. Prewitt in charge of pumping

It is supposed to be cased to about
100 ft depth
but the well nearby has water
standing at about same level & casing
extends to only 40 ft. Not used on
account of sand.

Feb 12
Clay Co.

22

Wayne L. Thompson, Driller
Care of Thompson Realty Co
1313

Durham Tropical Land Co have made
soil survey of rest of Clay
Co. Wiley

SW 1/4 section 32 - 7-26

on test farm

also 74

water stands between 6 and 8 feet
surface
depth 156. one well 7 feet on
146 another one 7 feet from
large supply of water.

M. Miller, Route 6 box 606

Jacksonville,
driller.

State road dept considering drilling
wells at Black Creek.

Clay Co.
Feb 12

Gamble and Stockton

23

well at Gamble and Stockton

415 ft ~~per~~ depth

12 ft per ft

drilled by Allie Guley

Flows out at about 15 ft above
sea level.

C. L. Hickey

Honey

Manager

of

Subsidiary report.

Feb 12

Clay Co.

24

From Black Creek bridge to
Doctors Lake Bridge on new highway
no clay seen along road.

Likewise from Orange Park to
Gamble and Stockton Bridge
Yard - most of this distance
is considerably higher than at
side of clay pits.

Durval Co

2 1/2 mi N Orange Park
grilled roadside ditch

Top
- yellow sand

Hard water
gray very sandy clay with yellow spots 3 ft

Feb 12
Duval Co.

25

Ortega - Small exposure of clay on Orange Park road at S. end of Bridge over the river, creek at about 10 ft elev. Surrounded by residential property.

Stephen Nichols Route 3, box 36
Cleveland St. near Moncrief Road. Outside of north west edge of soil. Clay shown in ditch and over a small area is so close to the surface that it is turned up by the plow. Generally covered by gray fine sandy loam. Clay is only 3 ft thick underlying some rather sandy material. Below it compact fine sand containing some clay.

Feb 13
Nassau Co.

26

about 2 mi N of Yaltee on coastal highway small exposure of sandy clay just south of swamp of Liffen Creek.

At Becker turned NE on graded road

Crandall
on main part of town. 5 or 6 ft bluff in river shows only sand

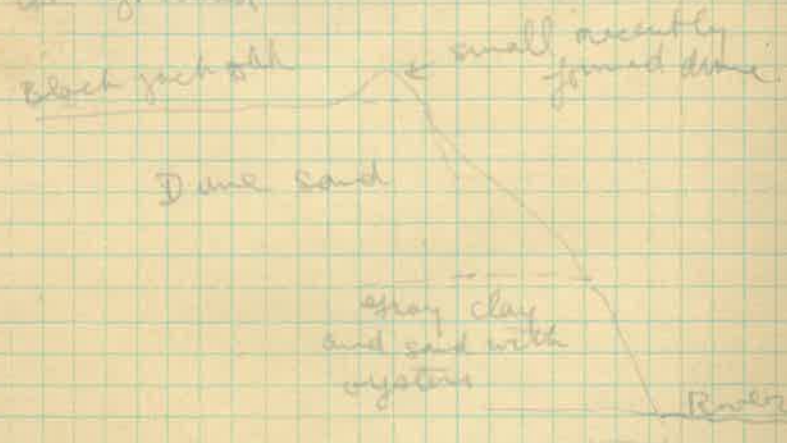
Heids Bluff -
Highest part is just about on a line through the axis of the land in the river. So at least 40 ft high as shown on contours map and probably a little more since I think the edge of the bluff is as high as any of the land in back. A 42 ft elev being shown on the road.
Generalizing section of highest part.

- (2) Sand fine, mostly loose and light color, yellow light gray to almost white. A layer of semi hard pan shows in places up to 30 ft.
- (1) Sandy clay and compact fine sand, 12 to 15 ft. Generally dark or "dirt" colored. Would normally be described as green or blue. Some of most sandy part is fairly light gray to light brownish gray. Certain lenses comprising a considerable proportion of the whole have very abundant oyster shells. Other molluscs very scarce. Many more broken than whole shells.

Feb 13
Nassau Co.
Reids Bluff

27

No doubt about dune topography of land in back of bluff. At least 1/4 mile or so. Dune formations is going on at present time on small scale, by sand being blown up from steeply sloping back. These recently formed dunes most prominent toward the upstream end of the bluff a little beyond the highest part. The dune maximum height of 8 ft above the land directly in back. In addition to formation of distinct dunes immediately adjacent to the top of the bluff some sand is blown back and from the bluff and scattered over the ground.



Feb 13
Nassau Co.

28

Roses Bluff

Sand in back is more nearly level than at Rends Bluffs. In fact I for about half the length of the bluff in the middle part it might almost be called flatwood, although rather dry flatwood. Nearly all of material exposed in bluff is sand. For considerable part of the distance there is a layer of tough "dye" colored clay about 10 ft up from water, from a few inches to a foot thick. Large proportions of hardpan in the sand of the bluff above this but most of the way more a less loose sand also. Below the clay is compact area so slightly greenish sand. Near south end of the bluff some small sand dunes found on top as at Rends Bluffs. Evidence of present time (that is when wind blow strong enough).

No shells seen in place. In one spot some which may perhaps have been washed out of bluff.

Hardpan breaks up well (breaks up to 3 ft in diameter, when small branch comes up over waterfall 15 ft high over head pan.

Feb 13
Nassau Co.

29

Jessie - at Turpentine still.

Artesian well - sulphur water running out of pipe 7 ft above ground. Elevation 20 ft according to topographic map.

Along road on both sides of wilder swamp north of Jessie exposures of clay - mottled gray and yellow to yellowish brown.

Old Brickyard on St. Mary R.

Near the landing there is dry land for a short distance along the river, with banks rising 6 to 8 ft in height with elevations up to 10 ft a few hundred feet or less in back.

Section at Landing		
	Soil - sandy loam	6 inches
0-211	Clay - mottled gray and red after weathered portion.	2 ft.
0-212	Clay - clay mostly very sandy, more so in lower part. Sand is partly in streaks and partly well mixed with the clay.	6 ft.

Between 5 and 6 ft of the upper part of this section is actually exposed on the bank. The rest was obtained by dragging a hole 3 ft deep going at least two feet below level of water in river. No water came into hole showing that although sandy material is impermeable.

The only pits and bays etc. are a few hundred feet east of this point.

Feb 13
Nassau Co.

Old Brickyard.

30

Pits are thickly overgrown. Most have timber in bottom.

500 ft or so east of point where samples were taken bank of river shows 6 ft section of which a scant two feet just below the top soil is clay, the rest being sand with a moderate proportion of clay mixed in. The clay can be seen to vary in thickness within the limits of the outcrop. Such brick as are laying around are mostly sand.

Between brickyard landing and Callahan are several small exposures of clay indicated by X on topographic map.

2.4 mi S of RR crossing at Callahan on Highway No. 4 roadside ditch and borrow pit shows 2 ft clay with 1 1/2 ft dark gray sand and loam over - bottom of clay not reached.

In the next 1/2 mi there are two more similar exposures, in places with less than 1 ft overburden on the clay.

4.1 mi S of Callahan similar clay.

A native 56 years of age says it is more than 50 years since brick were made here.

Feb 13
Duval Co.

31

Dinsmore

just S of Trout Creek between
highway and RR. small exposure
of clay in bank of creek and on
crossroad. It cannot be
more than 5 or 6 ft thick at the
most, since sand is plainly seen
below it above the bottom of the
creek and except for a very small
space, the clay if present is
covered with sand.

It might be supposed that in
Duval Co. workable deposits of clay
might be found which are similar
to those of Nassau or Clay Co.
A number of small exposures seen
but generally too small. Thickness
too small or in a district which
is built up so much that further
investigation would not only be
difficult but useless as well.

Feb 14

U.S. Engineers, Jacksonville
extend only west to Aucilla R.
office for rest of state is in Mobile 32

Capt. Samuel

J. W. Paxton - Associate Engineer

Will and Sherry elevation on upper
part of Suwannee - 5 gaging station
on Suwannee R. included in power
project.

Withlacoochee R. and Suwannee R.
actual elevations somewhat in doubt

Remains of bridge and bench marks
on Ochlocknee

Date of last draft of our which
they have is 1926 - Morrison
Structure and Strategraphy

Mr. Paxton says levels and
gaging records show that elevation
of St. Johns River at Palatka
is exactly the same as at
Jacksonville
Sandy further up river hold a back
flood flow so lower part of
St. Johns River might itself
be considered a lake.

33

Suwannee R. - Warren R. King.
gagings - Withlacoochee R.
St. Marys R.
Suwannee R.

Doxx

Grady
8 miles out on Hartung road
2 mi beyond RR
small middle of road
1st left hand road
large to right
gate - open

Feb 14, 1929
South Jacksonville

H.R. McKain, Sept water and light 34

4 well used (3 near City Hall
at top of ground) 719 lb per sq in.

2 wells.
1 well, 20 lb per sq in.
30 gal old 1 well (4 inch) 8 lb.
at edge of river, not much used

740 to 780 ft deep
no records

4 or 5 other wells running.

about 1/2 of city water from City
wells allowed to go to waste.
It would cause flow to diminish
if wells were allowed to run.

Mrs. Gann, Ice factory.

Flow was noticeably less in
summer of 1927 but still enough.

Newest well 1919

1200 gals per minute when put
in operation. Flow less now.

Pressure measured recently at top
man from Jacksonville waterworks
about 1 ft above ground.

Feb 19

S. Jacksonville

35

Bank marks on steps of City Hall
practically same elevation as where
pressure was measured.
Station is about 400 ft E.
Elevation of rail platform 2 ft
lower than point where pressure
was measured.

Casa de Baile - well used
for swimming pool

Mr. McKain says he can not
notice that one well has any effect
upon another. Without measurements
of each well under various conditions
he would not be sure of this.

He says that one well, not now
used practically ceased to flow upon
the completion of another well
with large flow which is now allowed
to run to waste.

Duval Co.
Feb 15

36

Bethel Church - 9.5

Jacksonville Beach
1 mi S of Casa Marina
hotel x Hard pan sticks
up through beach sand in several

small areas over a length of
600 ft or so. Elevation is
nearly as can be estimated from
about mean sea level to a foot
or two above. The highest part
is probably at about mean high tide.
Only dune sand at back of beach.

2.1 mi S of Casa Marina hotel
more outcrops of this block material
on beach. I have little doubt that
it is an old marsh deposit.

This was not exposed other time when
Sittler came by here, was
evidently covered by sand.

Littoral dune along here is not
a continuous uniform ridge but rather
a line of hummocks with a steep
cut face on seaward side. Dune
area is narrow, the marsh being only
200 or 300 ft from back of beach.
Dunes are so broken that I cannot
be sure of any definite arrangement
but there may have been another
dune ridge just inside the littoral
dune. I rather doubt it.

Highest dune here is 31 ft above
back of beach - about 35 ft above
mean sea level.

Feb 15
Duval Co.
Beach.

37

Near Mineral City

There is a SW wind strong enough to shift sand and even to lift it 6 ft off the ground. It is evident that the wind is rather a potent factor in the concentration of heavies but I still believe that the final concentration resulting in the thickest heavy layers could only have been done by waves.

In outer part of dunes thin streaks of heavy concentrates are common and this average of a 3 or 4 ft thickness may show some concentration.

Tide is going out rather rapidly. Sand is or rather hard compact much more shows at water's edge on the hundred ft south of the mill at Mineral City.

Slope of beach - Mineral City.
5.7 rise in 21 paces width of beach.

about half the width of the beach as exposed at low tide is now under water. Perhaps more. However the outer ~~most~~ portion line stretch has so steep a slope as that just measured. A small lagoon is just beginning to be separated from the sea by a little ridge left above the water. This causes an inflection in the slope and makes the average slope less.

A few measurements made with clinometer vary from $1^{\circ} 20'$ to $3^{\circ} 10'$.

Feb 15
Duval Co.
Beach,

38

Apparently another slope on outer part of beach but slope is so slight that it is impossible to tell by eye and measurements may not be representative. Perhaps $2\frac{1}{2}^{\circ}$ would be somewhere near average of part of beach now exposed (about 250 ft width).

7.5 ft rise in width of 28 paces.

slope is so small that measurement with Brunton is inaccurate.

Feb 15
Bradford Farms -
State Prison

39

well drilled about 2 years ago 7.50 ft deep. Water said to be about 50 ft below surface.

Capt Brown saw "Gangle" looked over this part of the country for clay very thoroughly a few years ago.

Pit 8 ft deep was dug at waterworks. Now the pit itself cannot be seen but from the dump it appears that there was sand on the surface and a mottled sandy clay below. Quite a few chromite concretions. This is from about the highest point near the prison.

Examined some more ditches on the prison farm. Some clay is exposed especially under the mottled elevated areas. These are actually only 5 ft or less above the depressing. Clay is always covered by sand. In places it continues for more than 100 or 200 ft along ditch. Greatest thickness exposed about two feet and here there is such sandy material at the bottom as not to encourage going any deeper. Do doubt that careful selection a sample could be secured which would test out satisfactorily for brick making but that would not be much wiser to it than the sample.

4.4 GW Column Well
6.2 width

Gamerille road

Pan Am filling on road
road - turn right

at first house on left



Feb 18
Alachua Co
Campville brick works 40

72.4 Aaron Flowers, mason.
all bricks made.
Steam heated dry kiln, & uses
exhaust steam in day time 36 hours to dry.
6-7 day water smoking
60-80 hours high firing
15 day to cool

"strong" clay from bottom of pit
has to be well mixed with more
sandy material from above to prevent
checking.

Shut mud, and cut Chambers
die. Submerged by oil under pressure.
Have been shut down for a year and
have done very little for more than
two years.

4 large kilns - Rectangular with
arched tops. up draft wood
burning.

Located just west of S.R. Ry.
Hillsides slopes to west down through
swamp. Pits located on this hillside.
About 40 acres or so worked over.
Have been making brick 40 years or
more.

R.R. cut through till 2.3 miles
to north indicates continuation
of similar material, although
it is not deep enough to expose
any entire section. seen in the
clay pits.

Feb 18
Alachua Co.
Campville brick works 41

Section on East (uphill) side of
pit near south end.

- 0-214 (A) Soil - somewhat loamy sandy 2 ft.
Gray at top to grayish yellow at
bottom.
- 0-215 (B) Clayey sand - mostly gray - weathered
yellowish brown to a small extent at
the top and in vertical streaks.
Almost no plasticity, but has enough
clay so that it dries into fairly
hard lumps. - Sand is fine. 6 ft.
- 0-216 White sand - less clay than overlying
sand. Fine texture. Water seeps
out at bottom. 3 ft.
- 0-217 Clay - mottled gray and red. Very
fine some what resembling lumps
earth. Bottom not reached. 5 ft.
This clay cannot be used for
brick because it absorbs too
much water and has too high
shrinkage.

Pit located at N.W. edge of village

Alachua Co
Feb 19

42

From E. edge of Gainesville out on
main highway to Starke and Jacksonville.
As far as I can see. Nearly all
flatwoods. Ditches and places where
telephone poles were set about only
sand.

At farbanks an area of dry
sand due to the proximity to
Hatchett Creek. Dry sand also
on the north side of the creek
valley.

100 ft N of Hatchett Creek in
ditch between R.R. and old road to
west of it. small exposure of slightly
greenish light gray clay. Very
fine texture, clayey, blocky
poor plasticity. Has
irregular and fol characteristic
of yellow earth. I think this
is the clay sampled by Bill.
Even if the clay were not
so much heavy sand overburden

The rest of the way to Waldo
about all flatwoods with small
upland swamps.

Nothing in S of Waldo
and in the town itself a clayey
sand or very sandy clay found
in ditches. nothing just about
ready to it so that nothing can
be learned about the stratigraphy.

Well on strawberry field of J.W.
Clemens 1.8 mi S of Waldo.
went through some fairly light clay
which can be seen where it was
thrust out. Well is said to be
2 ft deep. Water is about
2 ft from surface.

two story garage
stone house to left right

turn right (south)
at first corner $\frac{1}{4}$ mi
ends in woods

Alachua Co.
Feb 19

43

Out of Waldo to southern road to Hawthorn. To a little north of Orange Height rather well flatwoods. See only sand. From Orange Height to two miles beyond Campville the country has more relief. Cross several low hills. However, slopes are so gentle that it is little different from flatwoods in soil and vegetation.

Clay two to three mi N of Campville. R.R. cut shows material like that in upper part of clay pits at Campville but does not get much of any into the fine grained clay.

Clay 1.7 mi S of Campville Sta. near bottom of N. slope of hill, in roadside ditch. Small exposure exposure of fine gray clay with red spots, like the lower clay in pits of Campville Brick Co. Overlying it there is a clayey sand.

Clay 2.6 mi S of Campville. - small exposure of similar clay in similar topographic position (at the near bottom of hill on N. slope). Overlying material is fine clayey sand, exposed in R.R. cut with a single south drainage. The top of the hill is small beyond Ray Station, which is 2.8 mi S. of Campville.

Alachua Co
Feb 19

44

Fry - next to R.R. line toward Campville.

From Hawthorn out on Palatka road to Putnam Co. line. Very sandy country.

From Hawthorn to Loch Loosa on main highway following S. 1/4 R. 2. Fairly dry flatwoods interspersed with patches of somewhat scrubby hammock with saw palmetto undergrowth. The soil seems even more sandy in these hammocks than in the flatwoods, where it is more or less loamy.

From Loch Loosa to Island Grove a flatland with gray sands. At Island Grove many tall scrubby palmettos. Also some about the northeast part of lake Loch Loosa.

Alachua Co
Feb 19

Hawthorn

45

Clay
0-2.18

H.D. Fry owner - 1 mi N. and a little east of Hawthorn - about 1/4 mi S of S.A.L. R.

comes to surface of ground on top of hill in field. Overburden about 6 inches. Generally sand on surface about here. Only a small area where this red clayey material comes out.

Bored deep enough to prove thickness of 4 ft. Much of this is rather sandy. The more so toward the bottom. A few limonite ss concretions scattered about on top of the ground but none of them noticed in boring.

Scarcely worth testing this sample because nothing can be learned about the stratigraphy. Very likely a weathered portion of some of the beds in the clay pits at Campville, or others similar to them.

Hogtown Creek

Ditch & filling station
crossing to right
in ditch

Alachua Co
Feb 19

46

Gainesville to Micawby on main highway to Ocala crossing Macho Lake. Both north and south of the lake are several exposures of Hawthorn formation consisting of soft light colored sandstone, fullers earth, and perhaps "marl". All of the clay seems to be of the fullers earth variety, at least it looks and feels like it and has the same high shrinkage.

When weathered this fullers earth clay becomes brown but it still has the high shrinkage except where a large amount of the associated sand has become mixed with it and then the plasticity is so low that the clay is not workable.

Small amounts of this fullers earth clay seen at the old quarry ("phosphate mine") three or four miles west of Hawthorn.

Alachua Co
Feb 20

47

5.4 mi. out of High Springs on Newberry road turned west, reached Wade at 6.4 mi.

Gainesville to High Springs to Newberry to Trenton to Bronson. I did not see even a handful of clay.

From Bronson out on main road to Archer. The first three miles nothing but sand dunes on sight on each side of the road. Fine yellow loose sand as far down as any of the cuts go. A few long leaf pines. Many black jack oak. Some sand palmetto. On higher places rosemary.

Tract 6 to 8 miles NE of Bronson on this same road there is another area of dunes.

In SW part of Alachua Co in vicinity of Archer and for a few miles out from there on the road to Gainesville numerous exposures of residual clay on top of limestone, generally so well oxidized as to be red or reddish brown. No possible commercial importance because of small thickness from a few inches to two feet and irregular surface of limestone below. Moreover it is extremely doubtful whether the quality is suitable.

Feb 21
Putnam Co
Spring side

1 sq = 100 ft

48



About 2 ft of sandy clay exposed where Little Rice Creek has been ditched.

Clay is also cut into in shallow borrow pit between highway and RR, about 500 ft S of where sample was taken.

Clay

0-219

Woodburn

at Woodburn - between the crossroad at the station and the branch of Rice Creek a few hundred feet east. It is 1.5 mi NW of sample 0-209. "Clay" is exposed in bottom of ditch 400 ft NW of the bridge over the branch or creek and only 3 or 4 ft above the water in the creek. Hole dug in bottom of ditch gives following section:

Granny sand, gray 15 inches
Clay, mottled gray and yellowish brown, very sandy 5 ft

Some streaks in that clay are almost pure sand. The greater part of it probably about 60% sand. This is the most clayey.

right hand road
about an old field
clay pits to right a little
beyond school house.

Feb 21,

Putnam Co.

49

material which I can see about here so if it proves too sandy then it is not very likely that the deposit is a commercial one. Only 100 ft. below where the sample was taken a boring to depth of 4 ft. reached only sand and not a very clayey sand either. Elevation is slightly higher but not much so but that the bottom of the hole should have reached the clay if it were a horizontal layer.

The new road is here only about 150 ft. S of the R.R. and continues on west parallel to it. It is not shown on topographic map east of Woodburn and there it is not shown as close to the R.R. as it is at present.

About Spring side the X marks ~~map~~ is intended to show location of clay exposures on topographic map. may not be exactly right because of changes in road. By extrapolation of clayey material may be taken from Bladen clay on soil map with the understanding that it probably includes much that is too sandy for brick.

Feb 21
Putnam Co.

50

Herman Brown brick works on N side of Sumner Creek, two miles W of where Rice Creek station used to be. Pits located in flat woods at edge of swamp a few hundred feet back from creek. Some drain ditches are laying around here and were presumably made here.

Both brick and tile are very sandy and rather weak. Pits are full of water and not much can be seen of the clay. However it appears to be practically the same as that at Spring side - gray with yellow spots.

I should hardly consider this orange mangable water. It is about 30 ft. wide and nearly full of weeds. Many logs and branches and leaning trees to obstruct it. No doubt I could have been used for small barges.

Feb 22

Putnam Co.
SE part.

51

Long Swamp 150
72.5
75.7

Schuyler, owner
Victor Carrier

"Clifton" or "Hopkins point"

(name of locality)
on or adjacent to land of

Victor Carrier

Clay
0-220

about 500 ft. W of shore of Crescent Lake at west edge of Orange Grove in northern part of area of Bladen clay shown in SE extreme SE part of Putnam Co.

Six inches clayey loam - overburden clay - gray or drab with 4 ft. yellow spots. Tough and not very sandy. A few hard white limbs perhaps calcareous carbonates lower part. Some Copraze palm trees growing on it.

Part of the area underlain by this clay is in orange grove along the lake shore and part of it is in pine woods with considerable undergrowth. Elevation varies from two or three feet close to the lake to perhaps 5 or 10 feet back or 30 ft. back.

Feb 22
Putnam Co.

52

Dunbar - as far as I can see it is very sandy all around here. Not even any red clayey sand subsoil is exposed.

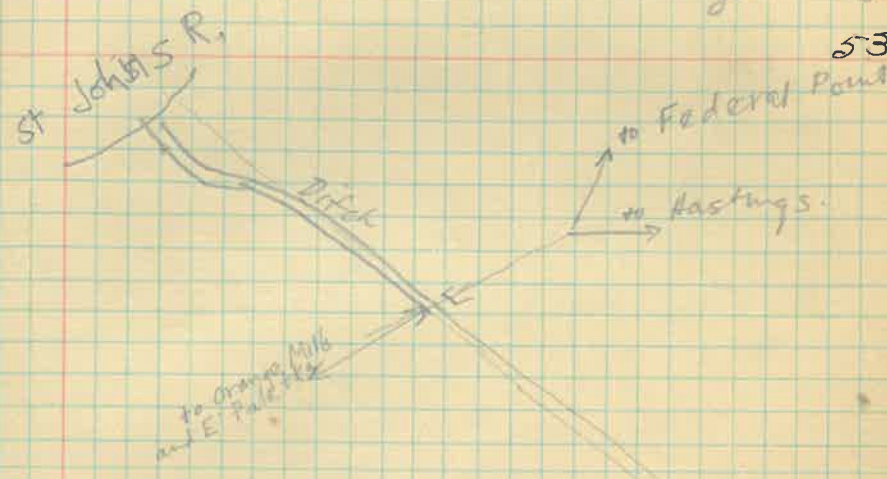
Crescent City In the immediate vicinity of the town mostly high and dry sandy land, a larger part of which is in citrus groves.

^{Huntington}
Crescent City to Fruitland (on St Johns R.) to Welaka to Satsuma Heights by paved road. Saw no clay whatever. Only at two or three places orange to brown sand with clay band. At Huntington this has been used on roads to some extent and is locally known as clay. Has flour feet or so of light grayish yellow sand overburden. Perhaps it is material of this nature which Bell referred to as being suitable for common brick but I can not see it.

Yelvington In the area west of Yelvington mapped as Bladen fine sand loam there are numerous ditches 1 1/2 to 2 ft deep and a few a little more. In none of them can I see a clay subsoil and in only a few places is a compact yellowish clayey sand reached.

I doubt if very much if clay suitable for brick underlies any considerable part of the area of Bladen fine sandy loam at any workable depth. In the more typical areas I think the subsoil is better described as a clayey sand than a clay.

Feb 23
Putnam Co.
2 mi NE Orange Mills



53

About 2 mi NE of Orange Mills 500 ft W of where road turns off to Federal Point, Palatka - Hastings Highway crosses lower drainage ditch. Followed this from the highway to St Johns River, 0.2 mi and from the highway to the RR, 0.5 to 0.6 mi.

Most of the way from St Johns River to a little above the highway clay is exposed on the sides of the ditch and the spoil banks. The clay does not make up anywhere near all the section but is in lenses interstratified with fine gray to brownish gray sand. Top soil varies from gray sandy loam to muck.

Between highway and RR, shell has been dug into at bottom of ditch especially for a few hundred feet just below the RR bridge.

Section as follows 100 feet below highway bridge which is as favorable a place as could be found with regard to thickness of clay and overburden.

Feb 23 Putnam Co.
2 mi NE of Orange Mills

[2.3 mi from Hastings]

54

- ③ Dark gray, nearly black loam. Might almost be called muck. It has so much organic matter. 1 ft
- ④ Clay - upper part dark gray from organic matter. Lower part light gray or drab spotted with yellow. Irregularly streaked with sand. 5 1/2 ft
- ⑤ Sand - fine light gray. Bottom not reached. Least weathered part "blue" gray, more weathered "drab" or slightly yellowish gray. 4 ft

The bottom of the section is at or a little below the level of the water in the ditch, which in turn must be very nearly the same as the level of the St Johns River.

I doubt very much whether the extent of the clay and the thickness of the clay and overburden about here is such as to be favorable for exploitation.

Between E. Palatka and Orange Mills there are no exposures of clay in the shallow drainage ditches.

Shell Bluff Deans Road
Deans Road / Canal

Feb 24
Flagler Beach
Flagler Co.

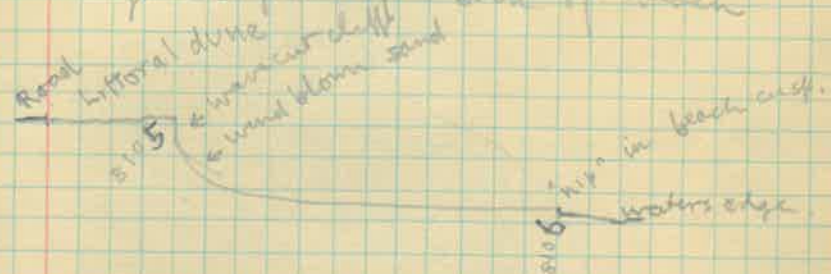
55

8105

1/2 mi N of Hotel
Sand (with shell fragments)
wave cut cliff in littoral line at
back of beach. Represents 3 ft
section in upper part.

8106

Sand (with shell fragments)
from little cliff or up on outer
side of truncated beach crest. 50
ft in front of back of beach



Scale vert and hor. 1 sq = 5 ft.

On the upper or back part of beach
the shell fragments are smaller and
make up a smaller percentage of the
whole than they do on part which
is under ordinary conditions washed over
by waves. Still less shell in
littoral line although prominent there
by no means shell.

Feb 24
Flagler Beach
Flagler Co.

56

1.6 mi N of Hotel - beach
still narrow - scarcely 100 ft. and
rather steeply sloping. Beach crests
are prominent.

There seem to be about three
dune ridges between the lagoon
and the ocean although they
are not clear cut and there may
be more superimposed on each
other. The middle one is not
very distinct. Back to the
crest of the third dune ridge
about 400 ft from the beach
vegetation is principally saw palmetto
with a few cabbage palms and
some herbs and grass but
practically no other trees or bushes.
About at this point the shell
fragments disappear upon the
top soil which is a gray to
nearly white sand and very small
shells begin to be abundantly
mixed in with the palmetto.
From the top of the third
ridge a rather gentle slope down
to the lagoon.

3.2 mi N of Hotel.

beach is 100 ft wide at present stage
of water (13.15 AM). Wave cut cliff
at back of beach extends with great
regularity in a practically straight line as
far north and south as it can be seen.
Beach shell contains a large proportion
of shell most broken into pieces of
medium to coarse sand size but
some whole or only slightly worn and
broken. Littoral dune about 15 ft
above sea - total height x sea slope

Feb 24
Beach
Flagler Co.

57

about 5 or 6 ft in 100 - much more
gradual than windward. 200 ft
or so inside the littoral dune is
another ridge parallel to it slightly lower,
both very straight and regular in height.
The highway is between them. This
valley between goes down to about 8 ft
above sea level. Inside of these two
the area of dune sand continues for a
few hundred feet before the marsh is reached
but there appear to be no more
clearly defined dune ridges.

Saw palmetto continues to be the
principal vegetation on the outer dunes
forming thickets which effectively
prevent any clearance except upon artificial
clearing and grubbing which is very
difficult. They are not much injured
by fire.

4.9 mi N of Flagler Beach Hotel
two dune ridges seem to be gradually
merging into one for the last 1/2 mile.
Crests of both can be recognized but
they are only 40 ft or so apart and
not much wally between.

6.3 mi N of Flagler Beach Hotel
Road goes through palmetto scrub
just inside the littoral dune ridge.
Most of the way since the last note
there is only a single dune ridge -
the littoral dune. In several places
it is double - that is has two crests
only 20 ft or so apart without much
wally between, indicating superposition
of one dune ridge upon another.
In places along line littoral
dune is slightly higher, perhaps
10 ft above sea.

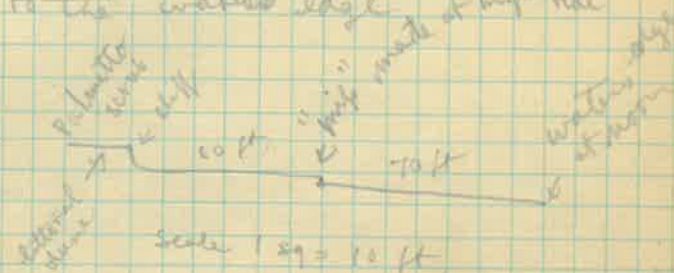
Feb 24
Flagler Beach
Flagler Co.

58

6.3 mi N of Flagler Beach Hotel
road and canal both turning inland
away from beach

Beach sand is here still highly
calcareous.

at 12 o'clock noon tide has gone out
so as to leave about a 70 ft width
of beach from the truncated beach
cusp to the water edge at high tide



Slope of outer part of beach between
high tide line and present water level
is fairly even - about 5 to $5\frac{1}{2}^\circ$ by
clinometer.

Some small dark streaks of heavy
concentrated on upper part of beach.

Feb 24
Flagler Beach
opposite hotel

59

Part of beach propped over by waves
between high and low tide under
ordinary weather conditions has
slope varying from 4° to $5^\circ 40'$
(clinometer). Total width of

beach about 150 ft. Outer 90 ft
(2 P.M.) has fairly uniform slope,
varying within limits just given.

The variation is mostly in a fairly
regular manner in connection with
the beach cusps. The slope being
steepest in line with the crest and
least in line with the trough.

The part of the beach in back of
this outer slope, amounting to
50 or 60 ft in width has a nearly
flat beach much of the way at about
the ordinary limit of wave action
and then a gradual curve of increase
slope up into the littoral dunes
somewhat of a wave cut cliff being
exposed most of the way. Part of
the distance of wind blowing sand
has filled in since the last storm
severe enough for waves to reach
the back of the beach, and make
a smooth slope all the way
to the top of the littoral dune.

3.0 mi S. of Hotel

Beach is very similar to localities
within a few miles to the north described
earlier. The same day. Truncated
beach cusps are very regular and higher.
Much shell in sand. Highway
going south here swings over for
the west from the top of the
intermost of littoral dunes to the

Feb 24
Flagler Beach

60

valley between the second and third one.
Vegetation on dunes is mainly saw
palmetto scrub. On third ridge
back from beach there begins to
be some cabbage palmetto and
scrubby oak while farther inland the
amount of oak increases.

5.5 mi

Feb 24

Beach
Volusia Co.

61

Dunes

5.5 mi S. of Flagler Beach Hotel (= 1.4 mi S. of Volusia Co. Line) Highway is there again on the outer dune ridge which has been somewhat reduced in height by grading the road.

Here there are ten or possibly nine small dune ridges between the beach and the marsh in back. A few cabbage palmettos are the nearest approach to trees which are found on these dunes. The third ridge is very low and there is a possibility of it not being a dune ridge. Counting this, the shell was all or very nearly all disappeared by the time the fourth ridge back from the beach is reached. Beginning with the fifth ridge and in all of those further back there is a yellow subsoil at a depth of about 8 to 18 inches with a fairly sharp line of demarcation between it and the white to light gray soil above.

Beach

Beach is here about 150 ft wide (3:30 PM). Some inaccuracies in this since waves are working over strip about 40 wide at this instant. Probably a good average. Still a large proportion of shell about like samples 8100, 8101. Beach cusps not so prominent, nor is there as much of a break between the outer slope of the beach between high and low tide and the part of the beach above it which is more overgrown than at Flagler Beach. There is no real wave cut cliff at each of peaks but the waves have something to do with removal

Feb 24

Volusia Co
Beach

62

of palmetto scrub in grading highway. Rather a steep grass covered slope which makes an almost equally definite back boundary to the beach.

Waves are breaking 200 or possibly 300 ft out and color of water indicates it is shallower considerably farther out.

8102

9.4 mi S. of Flagler Beach Hotel (= 5.3 mi S. of Volusia Co. Line)

Sand representing two ft depth in outer face of littoral dune.

8103

Sand out to 1 ft depth in littoral beach 50 ft in front of littoral dune.

8104

Sand out to 1 ft depth in beach 100 ft in front of littoral dune.

Beach is here and now (4:10 PM) 200 ft wide or a little more. Nearly uniform slope to the whole length. No cusps. Slope is distinctly more gentle than at Flagler Beach. Less shell but still a considerable amount. Difficult to get representative samples because of shell being sorted into layers or lenses. The part of beach just landward by waves seems hard enough to drive on.

8103 is a little below the upper limit of waves of last high tide (last night or early this morning) and I think this is somewhere near the maximum tide.

Feb 24

Volusia Co.
Beach

63

Ormond onto the beach 14.9 mi S. of Flagler Beach Hotel (= 10.5 mi S. of Volusia Co. Line). Beach is hard with uniform gentle slope like that at Daytona. Very little shell. Four to five foot cliff of sand at beach. Appears rather freshly cut and suggests an accumulation of sand along sand at foot of it. The last high tide has apparently washed all the way across the beach. Looking 6 ft or so in places sand shows concentrations of leaves at back of beach. Total width of beach (estimated) above water 200 ft. 4:30 PM.

Ormond Beach has some places a little soft where there is more shell. Not good for high speed driving as ten miles or so to south.

By time of reaching speedway beach south of main part of Daytona tide has come in a considerable part of the way.

Feb 25

Flagler Co.
Western Part

64

- 4.4 fork in road at crossing
of ditch
10.6 fork in road Andalusia 5 mi
St Johns Park 4 mi
15.6 landing at Andalusia

Andalusia Landing on Crescent Lake
at same place as Shell Bluff
Canal has been dug back a short
distance through the swamp from
the landing. Part of the material
thrown out by a stiff gray clay, with
irregular white concretions up to nearly
one inch in diameter. Some spherical
crystals also lying on the spoil bank.
These appear to have been washed
out of a river sand rather than the
clay, although they are so close to the
clay that they might be expected to
contain some calcareous material also.
Sulphur water is high in sulphur
so it is possible that some leakage of
it through the overlying beds may
have caused the deposition of sulphur.

Lake Crescent Farms, Company

Mrs. "Hewings" Cave taken.

25.9 turned north

Out to NE of Andalusia to NW corner
as crossing of Salt Creek Branch. This
is straightened and filled in by a ditch
and several clay dikes were passed.
Most of them show nothing but fine
sand and in one place "mud" was
reached without first passing through
any clay.

Feb 25

Flagler Co.
Western Part

65

Considering that better clays are
available and that the extent of this
may be small I do not believe that
the Shell Bluff clay is at all
favorable for exploitation. It would
have to be worked below water, unless
there was considerable pumping and diking.
One artesian well in the main
part of town of Andalusia and another
0.3 mi N on road to San Mateo.

St Johns Park

A considerable part of the area
of Bladen fine sandy loam shown on
the soil map as occurring around
St. Johns Park seems to have a clayey
subsoil at rather shallow depth.

to Andalusia

P.O. St. Johns Park

Dead
Lake

to

to Bunnell

0-222

Clay
0-222

Samples taken in edge of field opposite
Post office at road intersection, 0.6 mi
E of boat landing on Dead Lake.

Gravel bearing fine quartz and loam. 1 ft
Clay was spotted with red and yellow. 4 ft
Bottom of lake is mud but at some points
it is getting more sandy toward the
bottom of the lake (1 foot hole auger).

Excavation for gravel trench disclosed
nothing but clay. Road side
ditches reach the upper part of the clay
and in one or two places flow has
been reached in a field.

Flagler Co.
Feb 25

Western Part

66

The railroad into St. Johns Park is
large enough so that there would be
the only way of getting out any
clay products.

SW corner of section 26 T12S R29E
and nearest corners of adjoining sections.
Bladen clay. Bladen place area
west of Hunter Creek. Black and
mud on surface. Large amount
of organic matter. Water is within
a few inches of the surface and in places
actually on top of the ground making
a shallow marsh.

N-S ditch about 1/2 mi E of crossroad
through section. Bladen
fine sandy loam principal soil with
patches of Bladen clay. Sand clay
subsoil much of the way. Exposed to
depth of two or three feet. In
a few places shells and calcareous
concretions are encountered in bottom
of ditch, embedded in sand or sandy
clay. The clay at this locality
is probably suitable for brick
making but would require some care
in selection and processing. Fine varieties
have organic matter might be expected
to be troublesome in drying. While in
places subsoil is sand or so sandy
or clay that it could make only a
very soft porous brick.

Flagler Co
Feb 25
Haw Creek

67

Haw Creek Church - cross roads.
Ditches show a sticky gray to yellowish gray clay beneath 1 ft of dark gray sandy loam & brown loess soil. auger bot bottom of ditch does not show much change in subsoil in 3 ft depth. Clay has large proportion of fine sand. Graded roads going in all four directions from this point, the main travelled road being the one going east and north.

1/2 mi E of Haw Creek Church road crosses drainage ditch (same one as mentioned on preceding page and one mile farther south). Ditch is here wider and deeper. Spore section

- ③ Dark gray fine sandy loam 1 ft
- ② Very fine gray sand, almost a silt 2 ft
- ① Gray clay, fine texture, little sand, but considerable amount of marine shells & blue limestone colorations up to 6 inches or so in maximum length & thickness. These have shell casts. Clay has rather slight shrinkage but except for the calcareous material it could doubtless be used for making with the ordinary fine sand which shell contains some clay 3 ft

Feb 25
Flagler Co.
Haw Creek

68

1 mi E of Haw Creek Church the main road turns south again (on section line according to map). The ditch road going east from this point is not graded and does not look good enough to try.

At this turn in the road ditch shows clay with overburden of only 3 to 6 inches gray loam. Bored in clay 3 1/2 ft. Without reaching bottom or meeting much change. No shell or concretions. Clay is gray somewhat spotted with yellow and orange. Open pine woods all around.

Continuing south along the road clay is exposed continuously in the ditch from the turn in the road to within 250 ft of the main channel of Haw Creek. ~~At~~ about 1000 ft or a little more according to the speedometer. The clay also shows on the south side of creek in ditch along road.

Clay
0-223

1.0 mi E and 0.2 mi S of Haw Creek Church and 500 ft or so N of crossing of Haw Creek itself.

Section

- ② Soil fine sandy loamy, very dark gray at surface getting lighter with depth. 8 inches contain large amount of organic matter.
- ① Clay - rather light gray spotted with yellow and orange. Slight variations in amount of sand. No shells or concretions 6 ft. 2 ft of clay is actually exposed in

Flagler Co.
Feb 25

Haw Creek - Deans Still

69

the ditch for some distance. The other 4 ft was obtained with post hole auger.

Open pine wood with only a small amount of sawpalmite underbrush. Nearness to Haw Creek gives about as much drainage as could be found anywhere around here. More or less flooding in real wet weather would be a plenty to avoid.

Continuing south on the same straight road (here closely following the line of the abandoned R.R.) - small exposures of clay in borrow pit and road side ditch on south slope of valley of Middle Haw Creek. It is really not much higher since little of the surrounding country appears to be more than 10 ft above the level of the creek.

Continued south on same road to Deans Still. Several more exposures of clay in the interval.

The rails of the branch line still remain so far as Deans Still, but apparently is no longer used. Tracks are very shabby and rails are light.

At Deans Still turned east on road to Bunnell.

1.0 mi E of Deans Still graded road turns north.

2.0 mi E of Deans Still another graded road turns north along a ditch which extends both N and S from here.

Feb 25
Flagler Co.

70

2.0 mi E of Deans Still - N-S
ditch crossing road x Very sandy
clay in lower part of the main ditch
on some of which ditches perpendicular
to it. Has more red in it than is
usual for this region

Feb 26
Flagler Co.
Bikes Prairie

71

D. L. Gage

Flagler Beach (P.O. address)
residence 1/2 mi N of St Josephs landing
on W. side of canal x
Artesian well "Strong" pressure
at about 5 or 6 ft above sea level

O-224 Subsoil of Park wood clay - Prairie
Clay phase x

Bikes Prairie on W. side East Coast
Canal, 2000 ft S. of St Josephs
Landing

ditch sample 224
D.L. Gage
Res.

Sample obtained by boring with post hole
digger at side of ditch x
Section

- 1 Top soil - Black mucky clay 1 ft.
- 2 3" to 5" cream colored clay, calcareous
sandy, fresh or brackish water or land
snails in upper part 3 ft
- 3 1" clay clay - darker than that above, soft
and very sticky, contains decayed
vegetation, probably of *Quadrifidum* 8 inches
- 4 Marine shells in sandy matrix, water bearing
impenetrable to soil further x

Feb 26
Flagler Co.
Bikes Prairie

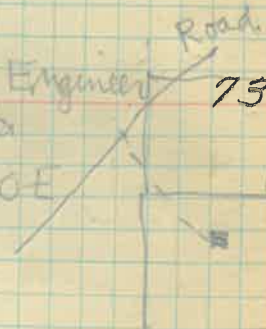
72

What I have called a calcareous
clay might be called a marl by
some. Where the mucky clay
top soil is underlain by this clay, the
ground is so soft that a rod can easily
be pushed in 3 ft or more. In
places the calcareous clay is more
sandy and then it is also harder.
Even assuming that the canal
were improved to give good water
transportation I do not think this
deposit is suitable for commercial
exploitation. Clay is so soft and
sticky that it would be extremely
difficult to separate and handle.
It is not very thick, considerable
organic matter and is calcareous.
Elevation varies from about 3 to
6 ft above sea level.

Other
Dave Roberts
Bunuel Court House

Feb 26
Flagler Co
Ocher

Dave Roberts County Engineer
Peacock - Roberts Co
Sect 28 T13S R 30E



Revolving trommel screen - log washer

Mr. Roberts says ocher produced was of very high quality but cost of producing it was so high that it could not compete with ocher from Cartersville, Ga. He thinks that the ocher associated with the ocher could be ground up and mixed with it. Ocher deposits very extensive but thin.

Says quarry was about 6 ft of material in thickness.

Feb 27

Zone adjacent to old workings shown

- ① Overburden (thin soil, gray sand or sandy loam)
- ② Ocher Yellow sand with abundant ocherous masses of laminated sandstone
- ③ Gray clay sandy and sticky as far as shown about 1 ft

In wet places woods. The "ocher" deposit is all or nearly all iron waste from ancient times. In places the rocks weather into a large, flat, ocherous surface. The rocks are mostly all sand so it surely would not be so exposed as suggested by Mr. Roberts.

Feb 26
Flagler Co
Black Point

43.2

clay
0-225

On Black Point Road 3 1/2 mi WSW of Bunnell, southern part of section 17. In area mapped as Shale Clay. There is clay at top of ground black and muddy with depth it gradually gets gray and lighter in color. At about 3 ft depth begins to be slightly spotted with yellow. Bored to total depth of 4 ft of which sample represents lower 4 ft. At bottom considerable masses of gray with light yellow. Very little sand in and part of section.

Water level varies from about 6 inches below surface upward, actually standing on the surface not far from small pine trees and saw palmettos. Also a good many cabbage palmettos, but the nearest one is 100 ft from where sample was taken.

Flat 1/2 mi to W of this locality full with sandy loam, top soil has sandy clay subsoil at about 1 ft depth.

The clay as sampled contains far too much water to be workable directly into bricks. It is so sticky it would be difficult to excavate.

T13S R 30E

Feb 27
Flagler Co.
Ed Roberts Brick Plant

75

Supposed to have capacity of 10,000 per hour. Hand operated with a No. 10 auger. What happens naturally in digging the pit.

Taken about seven men. Natural drying. Shed with roof and sides of. Dry about a week with sides closed and the opened so as to let wind blow through. Apparently not much cracking in drying. One kiln burned last year. Brick show lamination on ends. Many have transverse cracks. Light red color. Square up drift kiln made of an burned brick.

- ① Section at pit.
- ② Rather heavy gray loam 6 inches
- 0-226 ③ Clay, more sandy at top, gray, lightly streaked with yellow 5 ft.
- 0-227 ④ Clay, gray to blue gray or yellow 4 ft. Variable. Spill headwater remains. Contains no sand except near bottom where it grades into.
- ⑤ Fine sand light "blue" gray 1 ft. to bottom of hole.

Clay is worked only to depth of 6 ft below the top soil so does not include much of the heavy gray clay.

To west of pit are cultivated fields. To east a narrow strip of small pine woods and a little slope into the slightly lower swamp and swampy hammock of middle Bear Creek.

0-228

Reserved for mixture of two preceding

Feb 27

Flagler Co

Pt is 1000 ft W of Middle Hawk Creek
and on N side of road. The creek
is a swampy & No well defined valley

About March 9

- 5159 "Marl" - Choctawhatchee dark green within three inches above contact. 79
- 5160 "Marl" - within three inches above contact same as preceding but nearer to original surface of ground and of size.
- 5161 Calcareous clay - Chipola - 5 inches below contact.
- 5162 Clay - Chipola - 2 ft below contact.



Contact between Chipola and Choctawhatchee is sharp and approx level but has many small irregularities. The dark color marl in places extends a foot or more into the underlying clay in cracks and small channels. The contact with the main body of the marl but it probably exists.

The top of the Chipola in places is almost a limestone grading downward into a clay somewhat resembling fuller's earth within a foot or two.

Among the shells in the lower two feet of the marl at level there is a large percentage of small fragments of the underlying Chipola materials.

- 5163 Clay - Chipola 7 ft below contact with Choctawhatchee. This is almost at the contact of the clay with the underlying sand, about 7 ft being the thickness of the clay. This clay is white to greenish gray - stained light brown where weathered along cracks. In places the top of the clay is a rather intense green for a few inches adjacent to the overlying green clay. 80

- 5164 Marl unweathered - 20 ft S of preceding samples - 2 ft above contact.

Bench mark on downstream side of purling settings 58.38 ft elev. is about 1 ft below level of Chipola - Choctawhatchee contact. In some places the contact is actually the same elevation as this B.M.

- 5165 Sand light gray with brown spots 8 ft below top of Chipola. This sand grades into the overlying clay through a thickness of 6 inches or so.

March 10 Jackson Bluff

- 5166 Sand light gray and white 5 ft below bottom of clay layer at top of Chipola. 11 ft below Choctawhatchee - Chipola contact. 81
- 5167 Sand or sandy limestone almost white - Chipola formation 11 ft below bottom of clay layer at top of formation.
- 5168 Sand or sandy limestone almost white - Chipola formation 17 ft below bottom of clay layer at top of formation.
- 5169 Sand - white - calcareous 24 ft below top bottom of clay layer at top of Chipola. This is not more than 3 ft or so above the sample taken yesterday and labelled "6 ft above bottom of lowest drift tubes."

Except for the distinct clay layers at the top the unweathered Chipola shows little variation.

Voucher

97

25 greasing 1.25 5 oil 1.50 alternate exp. 2.00
 4 gas 1.00
 26 b 65 d 35 s 60
 27 b 50 d 35 s 75
 Room
 7 gal gas Bayard

3.95
 3.00
 1.68

Feb 6 ① 7 gas 1.96 4 qt oil 1.20 Tallahassee 3.91
 7 ② 5 gas Lake City 1.25
 8 ③ 5 gas 1.25 1 qt oil 30 1.55
 Green Cove Springs
 bridge toll .30
 9 ④ 5 gas Green Cove Springs 1.25
 11 ⑤ 5 gas " " 1.25
 11 ⑥ 7 gas 1.75 1 oil .30 2.05
 Green Cove Springs
 12 ⑦ Del Si Sana Hotel 21.50
 12 ⑧ Freight on clay from Green Cove Springs 1.39
 supper 1.00
 13 ⑨ 6 gal gas 1.95 s. 1.10 storage .50 1.44
 14 ⑩ sheet car fare .30 b. 95 d. 65 s 1.00 2.55
 15 ⑪ 5 gal gas 1.20
 ferry .15 b. 85 d. 35 s. 1.00 2.35
 storage 1.25 cleaning tiger .25 1.50
 16 ⑫ Carlisle Hotel Jacksonville 12.00
 b. 85 d. 50 storage .50 1.85
 17 ⑬ 8 gal gas 1.76 4 qt oil 1.20 2.96
 18 ⑭ greasing .75 6 gas 1.56 2.31
 20 ⑮ 5 gal gas 1.25 1 qt oil 1.25 1.75
 5 gal gas - kitchen 1.25 dinner .50 1.25
 ⑯ 14 White Horse Hotel 21.80
 21 ⑰ 8 gal gas 2.00
 storage .50 bridge toll .50 1 qt oil .25 1.25
 22 ⑱ 5 gal gas 1.25 1 qt oil 1.25 1.55
 ⑲ bridge toll .50 storage .50 1.00
 23 ⑳ further tires and repairs 25.60
 23 ㉑ James Hotel Palatka 12.65
 bridge toll .25 storage .50 dinner .50 1.25
 4 gal gas, Hastings 1.00
 24 ㉒ 2.50 d. 75 5 gal 1.25 60
 25 ㉓ 6 gal gas 1.25 1 qt oil .25 supper .60

Voucher 99

Feb 6 ① Tallahassee 7 gas. 4 oil greasing 1.25
 7 ② 5 gas Lake City .75
 8 ③ 5 gas Lake City 1.55
 bridge toll .50
 12 supper 1.00
 13 breakfast .95 supper 1.10 2.05
 storage .50
 14 sheet car fare .30
 breakfast .75 dinner .65 .30
 15 storage 1.25 b. 85 d. 35
 ferry 15 5 gal 1.20
 cleaning tank parts .25
 supper 1.00

100

J E Robertson, Samuell Pitt
Supply Co. / work sample
examined

R A Braughton, Main Water
supply to house of several day
deposits

Waldo - T K Godby

B F Williamson, Shreveville
Tang of

J W Coleman

Walter Bedy
187 Avenue A

J H Heath
care of Chemistry department,
copy of chemical report

+
Add up total area of clay
sills and clay seams. Figure percentage
of total area occupied in Florida

How many acres per year for
cement works of various capacities
total area per year of 20 years.
How many acres per year of clay required for
cement works of various capacities
Compare yearly output (potential)
needed to capacity output of plants
How much cement output of plants
yearly consumption of clays in Florida

Variation in number of brick plants
reporting production from earliest
statistics available down to present time

U. S Bureau of Mines and Chemicals
reports may go farther back than
Florida State Survey
Production and value of brick

P. L. Pierce 1195 Palafay St
 Pensacola,

Howler 5 ft Ocean Highway

Tangents

50	$\frac{1}{11} \frac{1}{2}$
10°	$\frac{3}{17}$
15°	$\frac{5}{18}$
20	$\frac{4}{11}$
25	$\frac{5}{10} \frac{1}{2}$
30	$\frac{4}{7}$
35	$\frac{7}{10}$
40	$\frac{5}{6}$
45	1

225 15
 9
 2025

Chapley Well Samples

Glenn - Sanger - Chapley

St Mary, Wisc.