

PROPERTY OF
FLA. STATE GEOL. SURVEY

No. 18.

Hard Rock Phosphate

1809.

Indexed June 18, 1915.

V 7/14, 1811

Short list for phosphates.

See Wakulla Springs and vicinity.

See N. T. Huvval. St. Marks ^{or of Crawfordville} in regard
to phosphates and Kost visit in 1886.
at Sopchoppy see A. Lewis.
regarding phosphates.

See R. Wilcox at Perry in regard to
Elephant skeleton mentioned by Kost.

See Ocala Bone for early history of
phosphates.

At Ocala look up records regarding
Snowden in 1888.

of Crawfordville see
Henry Raker, about bones,
at Woodville, see Mr. Thomas about
bones.

See Howell on Lafayette side about
8 mi above Wanner for some timber land.

V. 2/11/1911

✓ Pit of T. white Hard Rock w. 3

Phosphate is in white clayey matrix.
yellow, ^{partly like} clay strab 6 in observed.
Coral limestone boulders at the bottom
a stratum of gray sandy mddls
with irregular top. Seems to
mark the upper limit of phos-
phate. Above this is gray, mottled
reddish or light colored sand often
quite fine. In mining out 10 ft of
this sand is left on the phosphate it
is removed as overburden.

Section

sand in which top. max colors run to
core, yellow & top, brownish gray etc at
bottom.
Phosphate bearing clay & etc 25 to 80 ft.
phosphate taken up by car. 10 to 20 ft.
Overburden worked off as usual.

✓ Second pit & Fat White co. 5
in which photo was taken by Weston.

This pit very different from East.
limestone with smooth topped projections
on which phosphate formation rests
with irregularities.
on the east side a lens of fine grey sandstone
section impossible
this.

sand no. of bit section 1 to 15 ft.
phosphate 1 to 20 "
limestone about 100 ft.

..... sand pit 1 ft.

shale clay 6 ft.

 phosphate
1 x 1 1/2 ft.

limestone 25 ft.
with some patches of phosphate

Shale sides seen in the limestone where the
clay has settled. No overburden was
removed from this pit. The small amount of Bone
meat with phosphate though fine must be washed.
Boulders up to some tons found in pit. These
run out with cars.

The pits of the Hard Rock Co. (F. H. White) shows the following.

The foundation as is usual in this section is Acola Limestone. The top of this limestone is exceedingly irregular resembling in all respects the top of the limestone at the Anthony mine, also like the eroded surface of Miami. This surface shows usual exposure surface. Shells are found half eroded. Sea walls with the top eroded off. That is this limestone shows evidence of having had a sea surface at one time.

The phosphate bed which consists of phosphate pieces, plates etc imbedded in sandy matrix rests unconformably upon this limestone. The relation is some as at Anthony, phosphate is in plates in pieces & in boulders up to 20 in. on the east side pure slightly indurated sand like ours. Top of phosphate marked by sandy pebble stratum. Entire variable thickness

✓ of gray red sand.

Replacement masses can not
possibly account for this
phosphatic stratum. It is
a formation lying between
the limestone below & the sands
above. Some of it fills cavities
& holes in the limestone.

The ripple mark of Newmound
gives this a non-identical character.
massive ripple gives similar
attrition phosphatic. G.F. & H.
R.R. give some attrition phosphatic
large breaks occur in the limestone
which are ~~from~~ filled with phosphatic
shells which occur where the
phosphatic formation settled
down between the limestone
lumps.

In the abandoned pit of the
F. M. H. R. Co. one sees these
conditions & similar seen in other pits

Smooth newly uncovered limestone
usually eroded surface shells visible.
Against this a yellow clay in
on top 2 layers soft phosphate
clay each 1/2 in. Above this
less distinctly in layers.

These phosphate layers conform
to the irregularity of the limestone.
This proves that they were placed
here while in a plastic condition
this is soft phosphate clay & hardened
by induration.

This mine has objection too
much soft phosphate which works
away.
making small nodules, well & pure.

Limestone inclusions occur in
the phosphate stratum, also siliceous
nodules.

Old Bailey pit (abandoned)
on road to Hutton pit & near
Stichtucknee spring.
conditions same. Limestone at
bottom. phosphatic stratum extends
to a nearly to the surface.

Stichtucknee Spring factor
is formed of local limestone.

Hutton ^{Spahman No. 2} ~~to~~ - closed down
about Oct. 1888. 2 miles west of
Stichtucknee section

- 20 ft.
20 ft. x 30 ft.
25 ft. x 30 ft.
- (1) Fine pale yellow sand about 18 ft. to
 - (2) Phosphate bearing matrix
In places this matrix is indistinguishable
from the alum Bluff sands! also
has sand balls as at Tallahassee.
 - (3) Phosphatic but the top more
soft phosphatic. often buff yellow
clay 5 ft. to 6 ft.
 - (4) dark sandy phosphatic clay
to bottom 4 ft. 4 ft.

Dutton pit ^{Sharkman} No. 2. (cont.) 15

In the sands at the top of this pit there is no resemblance to the red sands (Lobogatta). This sand is prevalently pale yellow and entirely incoherent near the base however especially where thick dark carbon stained sands come in. This is seen in two places in the pit.

The phosphatic bearing stratum is unmovable beneath these sands. The top is very irregular. The sand below top boundary sometimes being often absent. Clay lenses 6 & 12 in thick particularly abundant near the top. Greatest thickness observed about $\frac{3}{4}$ ft. The lower part where thickness is somewhat different being more clayey & in one place 4 ft of dark colored clay from the base.

The limestone is present in places, it is rola & has some red top as in the pit & some relation to underlying phosphates.

Second pit much like first. The platform of about 4 ft more clayey bottom is the most noticeable feature of this pit.
Plate No. 1. Roll 1. to show inconsistency?

✓ Frank Sumner, Hildreth.

2nd April.

Supt. Mutton No. 10. 8 mi. N. 2 mi. W. Hildreth.

(30 min. drive at 4 mi rate)

The pit around this plant is in general similar to Spahn's No. 2. The yellow clay occurs at the bottom. It is here seen directly upon the limestone lying on the smooth surface of the limestone. The features of this pit are many large round or elongate siliceous boulders, also logs of decayed or old limestone.

abandoned pit 1/4 mi. N. of Hildreth. shows the usual relations. The unconformity between the sand & phosphate is well marked. The phosphate rests as usual upon the limestone. The sand here has many semi-concretionary nodules. The phosphate has some plates. The yellow clay below is absent.

cutters old mine, abandoned, or 19
Junction

Gives nothing additional.
+ or the usual pale yellow micaceous
sand. plus that matrix &
limestone foundation.

Schilmon & Bene. E.S. Cellidg.

well 108 ft ⁴/₈ in. dia. 10 in.
water 39 ft from surface. pit 33 ft deep
dug 1907. owner diller. cost 20 ft.
10 ft. com. 4/10 & 4/20 in.

old pit now abandoned
section.

Pale yellow sand 4 ft.

Red sandy clay top surface
nearly level 2 to 10 ft.

phosph. top surface very
unequal. 15 to 30 ft.

limestone at the bottom.

This pit is like F4 with the
red pit in the present red strata.

Sketch of old pit

20

dark yellow sand 4 ft

Red sand 1 to 10 ft

phosphate 15 to 30 ft

mineral rich level.

21

New pit Some

- (1) fine sand uniform level abt 5 ft.
- (2) Red Sand top line fine indurated 5-10 ft.
- (3) phosphate 15-25 ft. yellow clay matrix as follows

See Trunk of H. white.

analyses of sand Rock in pit
enveloped by F. T. Shier

Pz 10-	25.50	= 5
phosphate	55.70	
Iron & alumina	1.83	
silica & insol.	31.70	

J. H. Williams. F. M. White
sup. Collins min.
Giles Ellis F. M. White.

The Fat White Section

Four mines were in operation in the Fat white section at the beginning of 1907. One of these however closed down early in 1908. Another ^{closed down} closed in the fall, and at the close of the year only two mines plants in this section were in operation.

~~The mines of Fat white were~~
confined to a strip of track

W. C. Cain, Clarke, Fla.
2nd Am. R.R.

also plant C.

Cummers No. 3, about 2 mi
N of west of Clarke, about 3 mi $\frac{1}{2}$ N. of
S.A.S.

20. x x pit.
Pale yellow sand 5 to 10 ft.
Red sand sometimes slightly tanned 5 ft.
unconformity

Line of bottom not yet well.

Red. Sand

Plumbte

Chagal

2 Cop. 2nd Annual.

Plots N. 2, to show uniformity
between red sand & phosphate

at east end of plot 8 red sand 3 ft.
at west end red sand 12 ft.

Small pit East of plot.
Feature of this pit is abundance of limestone
which shows the usual features.

Abandoned pit S.W. of plot.
abundance of limestone usual features.

pit N.E. of plot. All pit now being washed
a good deal of limestone in this pit.

The ore burden at this locality is being
removed by steam wacker & pump. The
phosphate is taken up by pick & shovel.
water level is 50 feet from the surface
well is something over 100 feet.

photo 344 & show work in
5 " plant

Pit 1. up hill shows alum
Bluff sands.

Pit 2. Shows phosphate

Pit 3. shows neither sand nor phosphate
but redish waste scuff sands
possibly decayed residual material.
possibly also a fragment. If phosphate
shows at all in pit 3 it is usually
soft phosphate or phosphate clay.

The matter of up hill side is not
very definite in prospects personally
examined for while the sands seem to
be up hill in the absence of definite
lenses this can hardly be asserted.

The old ~~not~~ ~~pit~~ McLowell pit on
Section 17. N.E. $\frac{1}{4}$ of N.E. $\frac{1}{4}$.
shows the following.



1. Alum Bluff sands

2. Phosphate pit within a circle except top

3. on the N.E. side
4. into more or less sands. Some phosphate

Not mined out and some soft or 31
 clayey phosphate. The central
 elevation is possibly a little higher
 that is the pit encloses a small
 hill, elevation tho not very
 apparent.

Old Run pit seems to show
 Alum Bluff sands at several
 places and not definitely on
 one side. That is the phosphate
 but against sands on both sides
 altho at places the sands seem
 absent and the material is of the
 character of the "down hill" side.
 But this has no definite position.

In this pit. Central 25. The
 red soil is approximately level &
 varies with gradual irregular
 top surface

Top of phosphate bed 10 ft in level
 Top of phosphate bed 10 ft in level

Old pit abandoned. much lime
 Pale soil 4 to 10 feet
 yellow red sand 1 to 10 ft
 phosphate 2 to 20 ft
 Lim is usual

So m. N. W. corner, Prospect for.

Cumms. people.

a mountain is found here now
 near Hunt.

✓ Cumber No. 7.
 T. C. Bailey, Suth. Chiche.
 W. G. Vinyard, Eng. "

— Pit near plant.

Has a sand base practically
 entirely surrounded by
 phosphate. monotonous
 phosphate. Aston Lino.
 Not much of yellow sand &
 only a little of "Hard Pan"

— Old pit $\frac{1}{2}$ mi East.
 much lime, practically no red
 sand.

— New pit $\frac{1}{2}$ mi East. Practically no
 red sand. Alluvial conditions deep
 as usual. Not yet to lime.

Mutual B.

$\frac{1}{2}$ mi South of Antel 25 + $\frac{1}{4}$ mi
West of R.R. West of road 2 mi.

This place was making 4
+ the first part of 1909. It is up
after a few miles to the top of the
hill.

Old pit

Pale sand in section 5-10

Red sands " on 5-10

Plasph 5" - 20

Lime.

Plot 4. ^{new small pit} How uncommon?

Red sands on white sand,
white sand goes here to the
the south.

Two more pits with how lime
is additional features of interest.

Mutual 5 A. 2 mi diameter
nest of Wade.

Pit S.E. of about
very little overburden + then
loose sand. Indicate the
white sand.

more between white sand +
phosphate by lower

Sand.
Displace

Photo 5 in this pit to show
50 ft. bank of phosphate.

J. M. Miller. - Wade. Fla.

Location of phosphate mines for 1909. From north south.

- (1.) Dutton No. 10. in Sumner county north Columbia County line not far from corner of county two or three miles from its structure & two miles or 2 1/2 from Hildeth. *Operating & close 09.*
- (2.) Dutton's Sparkman no 2. - about one mile north of east of Dutton No. 10. in Columbia County but near line of east west fog. *closed Oct. '09.*
- (3.) Schilmon & Ben. ^{Conroy} plant about 1/2 to 1 mile N. E. of Lake City Junction. *Operating or close 09.*
- (4.) Plant of Fat White Had Rock Co. 1/4 to 1/2 mi about death route of Ft. White. *closed Jan. 09.*

These four are the only mines worked during any part of 1909. No. 4 said to have closed Jan. 12 '09. No. 2. closed in fall of 1909. also Oct. a Nov.

Nos. 1 & 3 running at end of 1909. ~~these~~ companies in this section as follows operating or close 1909. Dutton one plant Schilmon & Ben. 1 plant.

Location of phosphate mines for 1909.

Newberry Clark Section

From north to South as follows

5. Cummer No. 3. about 1 1/2 to 2 mi. N. of S.A.L. & about 2 mi. N.W. of Clarke. ¹³⁴ *Operating or close 09.*
 6. Thompson's new mine. Sect. 21. ^{88, 16 E.} *Operating will operate only in 1900.*
- These are the only mines N. of S.A.L. this area.

- (7) Central 25. - This plant is south of S.A.L. & just west of A.C.L. phosphate branch. ¹³⁴ *Sect 25. ~~not~~ side mining det. 8.16. Operating or close 09.*
8. Cummer No. 7. - This plant is about 1/4 or 1/2 mi. S.E. of central 25. It is on the east side of A.C.L. phosphate branch & is the only mine east of this branch as far west as node & mutual 5A+B. ^{Sect 30 S.W. 1/4. 8-17.} *Operating or close 09.*
9. mutual 5A. - This plant is about 1/2 mi south of central 25 & is about 1 1/2 to 2 mi west of node. It is on the west side of A.C.L. phosphate branch & is within 1/4 mi of track. ^{On west side of S.A.L. Sect 5. 2. 1/4 8-10. ~~not~~ close 09.}
10. Mutual 5B. This is 1/4 mi N. & N.W. of 5A. ^{that is about 2 mi N.W. of node. on west of A.C.L. & S.A.L. some 1/4 of 36. 8. 16.}

Above list is complete for mines from Columbia County to node. No. 6 in construction No. phosphate to turn up in 09. No. 10 closed for repair in 09. Nos. 5, 7, 8, & 9 running or close 09.

10
No 11. Lutton No 9. about 6 1/2 mi ⁴⁴

N. of Newberry. i.e. 2 mi S of No. 10.

on west side of Trough & east side of
S.A.L. sec. 12. N.E. 1/4 - 8. 16. Operating at close of 09.

No. 12. Lutton No. 7 at Lutton Quarry

East side of Bors town. ^{and}

sec 13. S.E. 1/4 9. 16.

No. 13. Lutton No. 1 1/2 to 1/2 mi east of

Lutton's Quarry & on east side of
tram + on east of S.A.L. S.W. 1/4 18. 9. 17.

Not operating at close of 09. closed South side of 09.

No. 14. - Mutual No. 1. about 1/2 mi

South of Quarry & on east side of

tram also east side of S.A.L.

N.W. 1/4 sec 30 9. 17. Operating at close of 09.

No. 14. - Central 24. west of Tram to

west of S.A.L. sec 24 N.E. 1/4 9. 16.

Not operating at close of 09.

Said to have closed down in 1909.

No. 15. - Albu Mutual No. 2

East of S.E. 1/4 23 or N.E. 1/4 126.

near line in city area. west with road.

Operating at close of 09.

No. 16. - Lutton No. 12 - S.W. 1/4 24.

west of both S.A.L. & tram line

operating at close of 09.

Newberry is in sect 4. Center of sect. 10. 17

No. 17. - Lutton No. 3 3/4 N.W. 1/4 24. 9. 16

Operating at close of 09.

No. 18. - Currier No. 1 (3) - Shut down

Mr. Hodge says on 6th day of Feb. 08.

west of both S.A.L. & tram line

North half of 25. 9. 16 near center of

No. 19. Currier No. 2 - How 25.

N.W. 1/4 of 25. 9. 16

Operating at close of 09

No. 21. Franklin No. 2 - west side

of tram. N.E. 1/4 sec. 31. S.E. 1/4 8-17

closed in March. Run down for 1/2 mile. 9. 17

Franklin No. 2. S.A.L. sec 31. 9. 17 S.W. 1/4 17

No. 22. Camp N. of tram N. of

Newberry. Perry road. N.W. 1/4 6. 10. 17.

Operating at close of 09.

millers mine of Coal fields

No. 23.

All north of Newberry Perry road.

No. 23 & 24 This is ~~same~~ conflict & millers

west of plant is south of this on

S.W. 1/4 of 6. 10. 17. closed at

end of 1908. closed 1st of May

No. 24. - 23. Currier has one in sec 5. 10. 17.

closed July 1909. 9. 17

25 & 26 Currier South of Lutton

McDonnell in Sect. 4 & 8.

operated there in 1909.

✓ Hutton. C. L. Hutton Gen. mg. 46
✓ Frank Hutton mg.
E. L. Hughes. Common
Anderson Photo.

✓ F. M. Hodge Newberry. S. & Agri. Mfg.
✓ F. Weston " "

✓ P. L. Norfleet. Newberry.

Tioga plant is in near center of
sect. ^{N. W. 1/4} 10. 18 6 mi E + 1 S. of Newberry.
Blew up in Dec. 09.

Cummins No 3. Sect. 5. 10. 17.
Shut down on July 1. 09.

(Note Cummins 6. not opened during 1909)
Sect. 9.

✓ T. L. Blount. Newberry, Tex.

16 Hutton No 3. - S. W. 1/4 of Sect 24
9. 16. Operating on the close of 09.

17 Cummins No 1. North part of Sect 25
2. 16 of near middle line N. & E.
Shut down Feb 6. 09

18 Cummins No 2 Also known as C. 20.
H. L. Hodge. Sect. N. W. 1/4 of 25. 9. 16
Operating of close of 09.

19 20. Mutual No. 1. N. W. 1/4 of Sect
30. 9. 17. East of S. A. L. & A. C. L.
Operating of close of 09.

21 Franklin Phosphate Co. No. 2
west side of town. N. S. A. C. L. to
Wilcox. Sec. 31. S. E. corner
west of S. A. L. Closed in March 09.

22 Franklin Phos. Co. No. 3
Sec 31. Sec. 9. 17. N. of A. C. L.
to Wilcox. S. W. corner of section
closed Feb. 1 09.

23 Comp phosphate Co. "Williams mine"
N. of town + N. of Wilcox. road. A. C. L.
west of S. A. L. N. W. 1/4. 6. 10. 17.
Operating of close of 09.

The above list comprises all mines
in operation ⁰⁹ with 1. A. C. L. & Wilcox.

²³
24. Franklin Phosphate Co. No. 48
south of A.C. L. & Wilcox.
on S.W. $\frac{1}{4}$ of Sec. 6. 10. 17.
Closed May 8, 1909.

²⁴
25. Cummer No. 5, Sec 5, 10. 17.
south side of A.C. L. & Wilcox.
Closed down July 1 '09.

²⁵
26. Mortlowell. Plant on
N.E. $\frac{1}{4}$ Sec. 8. 10. 17.
Closed about March '09,
No. plants working south of
Wilcox ~~pass a road~~ at close of '09.

²⁶
27. ~~Arrived Phosphate Co.~~
~~Co. plant~~ N.W. $\frac{1}{4}$ of Sec.
10. 10. 18. closed Dec. '09.

At the beginning of 1909 twenty-two
plants were in operation in the Newberry-
Clarke section. At the close of the
first quarter of the year eighteen
were operating; ~~By July 1st only twelve~~
At the close of 1909 only twelve
were in operation in this section.

49
Summary of conditions of deposition
in Clarke area, (excepting Neals & extending
south to well).

The limestone in this section is not
far from the surface. ²⁴ Not indurated
the phosphate mine reaches limestone before
water is reached. Occasionally, however, the
water level and not limestone top mining.
The water level here is about 50 ft from
the surface.

There is absolutely no regularity
as to occurrence of limestone. One pit
has much limestone while an adjoining
pit has very little.

The top of the limestone is without
exception rounded smooth. Shells rounded
over, the limestone is broken & fresh
Some of these rise up 15 to 25 feet.

The relation of the phosphate to the
limestone is the same as in the Whit section.
That is the phosphate lies upon & occupies
the irregularities of the limestone. The
irregular features of phosphate con-
forming to the limestone & giving
the appearance of conchoidal ex-

foliation is noted here. also the yellow clay stratum next the limestone, 1 to 2 in. in thickness.

The limestone stratum is also similar. In general the most frequent clay lenses are seen near the top. Near the limestone the light yellows are frequently seen. As to the mines in this section the interbedding of gray sand & phosphate matrix was definitely determined.

A new feature in the gray sand was the presence of small minute rounded black grains in ^{sand} ~~gray sand~~ of central ss.

The relation of sand to phosphate seen at Neals was not verified.

The sand is sometimes surrounded or nearly so by phosphate. The sand sometimes underlies the phosphate. The sand sometimes underlies it is sometimes interbedded with it. The thickness of phosphate strata is totally irregular. It is by being cut into lobes by the irregular beds of limestone & cut into olives

by eroded surface. It runs from 0 to 40 or 50 feet or more.

The same relations with regard to the top of strata as elsewhere. This is an irregular top.

The red sand, called "hard pan" of the mines of this section is absent or less in places, elsewhere it has been its character is present at all & is not definite. In places it has its usual indurated character & may be one to 10 or 15 ft thick. Its top surface as elsewhere is undulating but not sharply eroded.

The lower sand on top of the yellow is practically always present and may be one to 20 feet thick. It has the usual character.

Old Hutton pit $1\frac{1}{2}$ mi N. W. of
Newbury. - much lime. Not
much overburden & - 10 ft. worth
lime rock. Gray sand seen a
mile. (East of Road + E. of Pen Lion)

Hutton's old Habbag pit. Abandoned.
2 mi N. W. of Newbury at a great
Bourton road. This is a local pit.
with only a small amount of lime.
a good deal of the gray sand
around the sides. Little red
rock. Some loose sand as usual.

Small pits, two, $\frac{1}{2}$ mi beyond
give some lime. Scarcely any red
rock. ~~White sand~~ Gray sand
or clay is dark red as usual.

Old. More mine mor (S. of) Cumer 2.
Not much red & rich clay. otherwise same

Mutual No 1. about 3 mi from Newby
on east side of Barro ^{road} ~~road~~
cut of S.A.B. road, 1/2 mi

East pit ^{1 mi E.} has much limestone
with the usual character. This is
pale rocks & the surface. Phyllo
irregular & little gassed mud.
almost no overburden. This has but

small pits 1/8 mi E. conditions
much the same, except some drag
red sands.

Large pit nearly level & S.E.
now out of out & being filled.

Some following section
Pale yellow & white sand
Red clayey sand. Had for 4 to 12 ft.
Phyllo stratum 1 to 10 ft
Limestone at bottom usually.

Pale yellow sand.

Red clay sand

Phyllo

Mutual No. 1 (Cont.)

Longest nest of the place
 giving little that is new. much
 like the smaller pits. $\frac{1}{2}$ + $\frac{1}{8}$ in E.
 a good deep line. some red mud
 not much. about the usual poly. etc.
 The chief characteristic of the three
 pits is the decayed character of the
 phosphat matrix. The sands of the
 matrix especially in the pit
 nest of these being decayed
 white or pinkish, the usual color on dry.

Overburden on this plot is
 being removed by team & scrapers &
 by pump. Phosphate being removed
 by pick & shovel.

Conchellirous seen among overburden at
 Luttons No. 10. At Luttons No. 18 the
 phosphate is being dried by kilns. also at
 Cummins No. 3. This is to reduce impurities

Shut on No. 1, - $\frac{1}{4}$ to $\frac{1}{2}$ mi E of Boston
 worked the first ~~several~~ months of 1909.
 closed later. This mine should be No 13
 of the list north to south.

This mine & Mutual No. 1 are the only
 mines worked in 1909 east of town & ~~the~~
 S. of Cumm. R. close or south of road.

S.E. pit of No. 2. This pit is
 located on the side of a very slight
 rise. The difference in elevation from
 the N to E across the pit is about
 5 ft. The lowest corner is S.E. The
 highest is N.W. The dip probably 8 ft.
 The coating of weathered sand is of
 something like uniform thickness around the
 pit that is 6 to 10 ft. The top surface of
 the red sand slopes with the hill or valley
 so, it has the usual minor irregularities.
 The top surface of the phosphate stratum
 has the usual absolute irregularity.
~~The above~~ Its top surface is marked by
 as frequently seen elsewhere by
 visible cone or aggregation of sand. In the

N. W. corner is built up to within two 61
feet of the sea leaving only two feet thick of
red sands on either side of this higher deposit
of 5 or 2 ft. Near the south west corner
is a small up entirely ~~cutting off~~ cutting off
the red sands.

The phos plate gives place on the
north side to gray sands. Also on
the west. On the south the sands
seem to be more decayed. On the S. E.
the hill rises against limestone.

On the south east the down hill side
typical sands are found. yellow
material is found approaching the limestone
the S. E. corner.

Next pit near by is highest on S. E.
corner on N. E. It is another side of same hill.
Lower sands N. E. side 5 ft. They gradually
deepen around the hill to 15 ft. on N. E.

Red sand top surface is usual, gradually
dropping from left to low ground. 12 ft. x 2 ft.

Phos plate shows typical gray sands on
S. W. side. The downhill side largely
covered pure white sands the are seen
not far from the down hill side. Not far
from the are found clastic from sands to
again one white sands.

Hutton No. 7. at Cammaroy & just
west of Bann town, East of S.A.C.

Re new block some lime, & a
good deal of clay. Also a good deal of
chocolate sands. Not much red sand as
the overburden.

Phosphat ~~is~~ ^{has} ~~not~~ ^{been}
seen since.

Mr. Frank Lewis says there a
piece of vegetable matter resembling
a cypress cone was found at Hutton
No. 1. in the phosphat. & P. - later.
The office & Hutton has. minutes & etc.

Hutton No. 62. & Hutton No.

Re some land for. no lime.

About 31 ft. Phosphat in
pit near block.

Six pits all much some
phos 2 & 3 & coated with lime

Mutual No. 2 - pit near block

unrel - Some Hutton

abandoned pit East of Hutton. does some
no lime

64

1. to S.A.L. Leans over line of
 Bed of the river A.S.L. in $\frac{3}{4}$ 29.
 Runs direct to + between mutual S.A.L.
 in S.E. 36.
 Runs directly south.

Dec 15.

Central 20 in along the side of ⁶⁵
 a hill. On the up hill side is
 some sand 5 ft in one place but
 dropping to 18 or 20 mts.
 Red sandy clay as usual
 plus phot as usual
 Some limestone one fragment
 seen near up hill side.

Cummins No. 2 ²⁵ Mr. Hodges Sept.
 Small pit east of plant.
 ground on east somewhat higher.
 No limestone seen.

large pit. perhaps the largest in
 the plot had rock. certainly the
 largest in this section. occupies a
 valley running to Mr. Hodges Sept.
 some lime not a great deal.
 One feature peculiar - pure sand
 comes down abruptly into plot
 then

Plot 1	sand	Plot 2	sand indistinguishable with plot sand here.
Plot 2	sand	Plot 3	
Plot 3	sand	Plot 4	Plot 5
Plot 4	sand	Plot 5	Plot 6
Plot 5	sand	Plot 6	Plot 7
Plot 6	sand	Plot 7	Plot 8
Plot 7	sand	Plot 8	Plot 9
Plot 8	sand	Plot 9	Plot 10
Plot 9	sand	Plot 10	Plot 11
Plot 10	sand	Plot 11	Plot 12
Plot 11	sand	Plot 12	Plot 13
Plot 12	sand	Plot 13	Plot 14
Plot 13	sand	Plot 14	Plot 15
Plot 14	sand	Plot 15	Plot 16
Plot 15	sand	Plot 16	Plot 17
Plot 16	sand	Plot 17	Plot 18
Plot 17	sand	Plot 18	Plot 19
Plot 18	sand	Plot 19	Plot 20
Plot 19	sand	Plot 20	Plot 21
Plot 20	sand	Plot 21	Plot 22
Plot 21	sand	Plot 22	Plot 23
Plot 22	sand	Plot 23	Plot 24
Plot 23	sand	Plot 24	Plot 25
Plot 24	sand	Plot 25	Plot 26
Plot 25	sand	Plot 26	Plot 27
Plot 26	sand	Plot 27	Plot 28
Plot 27	sand	Plot 28	Plot 29
Plot 28	sand	Plot 29	Plot 30
Plot 29	sand	Plot 30	Plot 31
Plot 30	sand	Plot 31	Plot 32
Plot 31	sand	Plot 32	Plot 33
Plot 32	sand	Plot 33	Plot 34
Plot 33	sand	Plot 34	Plot 35
Plot 34	sand	Plot 35	Plot 36
Plot 35	sand	Plot 36	Plot 37
Plot 36	sand	Plot 37	Plot 38
Plot 37	sand	Plot 38	Plot 39
Plot 38	sand	Plot 39	Plot 40
Plot 39	sand	Plot 40	Plot 41
Plot 40	sand	Plot 41	Plot 42
Plot 41	sand	Plot 42	Plot 43
Plot 42	sand	Plot 43	Plot 44
Plot 43	sand	Plot 44	Plot 45
Plot 44	sand	Plot 45	Plot 46
Plot 45	sand	Plot 46	Plot 47
Plot 46	sand	Plot 47	Plot 48
Plot 47	sand	Plot 48	Plot 49
Plot 48	sand	Plot 49	Plot 50
Plot 49	sand	Plot 50	Plot 51
Plot 50	sand	Plot 51	Plot 52
Plot 51	sand	Plot 52	Plot 53
Plot 52	sand	Plot 53	Plot 54
Plot 53	sand	Plot 54	Plot 55
Plot 54	sand	Plot 55	Plot 56
Plot 55	sand	Plot 56	Plot 57
Plot 56	sand	Plot 57	Plot 58
Plot 57	sand	Plot 58	Plot 59
Plot 58	sand	Plot 59	Plot 60
Plot 59	sand	Plot 60	Plot 61
Plot 60	sand	Plot 61	Plot 62
Plot 61	sand	Plot 62	Plot 63
Plot 62	sand	Plot 63	Plot 64
Plot 63	sand	Plot 64	Plot 65
Plot 64	sand	Plot 65	Plot 66
Plot 65	sand	Plot 66	Plot 67
Plot 66	sand	Plot 67	Plot 68
Plot 67	sand	Plot 68	Plot 69
Plot 68	sand	Plot 69	Plot 70
Plot 69	sand	Plot 70	Plot 71
Plot 70	sand	Plot 71	Plot 72
Plot 71	sand	Plot 72	Plot 73
Plot 72	sand	Plot 73	Plot 74
Plot 73	sand	Plot 74	Plot 75
Plot 74	sand	Plot 75	Plot 76
Plot 75	sand	Plot 76	Plot 77
Plot 76	sand	Plot 77	Plot 78
Plot 77	sand	Plot 78	Plot 79
Plot 78	sand	Plot 79	Plot 80
Plot 79	sand	Plot 80	Plot 81
Plot 80	sand	Plot 81	Plot 82
Plot 81	sand	Plot 82	Plot 83
Plot 82	sand	Plot 83	Plot 84
Plot 83	sand	Plot 84	Plot 85
Plot 84	sand	Plot 85	Plot 86
Plot 85	sand	Plot 86	Plot 87
Plot 86	sand	Plot 87	Plot 88
Plot 87	sand	Plot 88	Plot 89
Plot 88	sand	Plot 89	Plot 90
Plot 89	sand	Plot 90	Plot 91
Plot 90	sand	Plot 91	Plot 92
Plot 91	sand	Plot 92	Plot 93
Plot 92	sand	Plot 93	Plot 94
Plot 93	sand	Plot 94	Plot 95
Plot 94	sand	Plot 95	Plot 96
Plot 95	sand	Plot 96	Plot 97
Plot 96	sand	Plot 97	Plot 98
Plot 97	sand	Plot 98	Plot 99
Plot 98	sand	Plot 99	Plot 100

Franklin mine No. 2,

on the north side of ACL to Wilcox.
 Little or no slope or dip of elevation.
 Low road 2 to 100 ft.
 Red sandy clay at 6 or 8 ft.
 (See photo shows as usual. Not
 myd line.

Franklin No. 4 -

on the side of a hill.

Some sandy clay. See photo
 for a photo to show sandy clay.

Cumner No. 5.

The small pit at this place
 contains the sand pebble con-
 glomerate noted before with.
 The pebbles are of all sizes up to
 6 + 3 in & weighs pounds
 most are more or less flattened, all
 are rounded & water worn.
 There are in the old photo water.

Mordowells mine on sect 8. 68
N. E. Corner. near Newburg, Col. ^{Feb. 27}
in March. 09. There pit to this mine
seems to present nothing exceptional.

Union phosphate co. 12092.
Boiler blew up in Dec. 09. Plant closed
leaving a small lot of rock in the
ground.

The only exceptional feature noted in
this pit was the masses of siliceous
boulders surrounded by the soft sand
by a very rich phosphate matrix.
These boulders have the usual slight
flattened elongate shape. decayed
& lighter colored on the surface.
bluish on the interior. Some
weigh as much as one ton. Still they
broken on one side.

Section pale sand about 4 ft.
Red sandy clay. 50 6 to 8 ft.
Phosphate 10 to 40 ft. varies to surface or
nearly so in places.
same rock as usual. a good deal of it.

Phosphate Companies

operating in Newburg Clarke section.
at the close of 1909.

Cummins Lumber Co.

Central Phosphate Co.

Mutual Phosphate Co.

Hutton Phosphate Co.

Franklin Phosphate Co.

Comp Phosphate Co.

Union Phosphate Co.

The following operated, but not operating at
close of 1909:- John McIlwain.

T. A. Thompson has plant at Neale in
process of construction.

The Newberry - Clark Section. 71

General Condition of occurrence of
the phosphate deposits.

The conditions of occurrence of phosphate in the Newberry - Clark section are closely similar to the conditions in the Fort White section. The ground surface is ~~slightly~~ ^{is} ~~presents~~ ~~not~~ ~~slightly~~ ~~rolling~~, ~~but~~ presents slight irregularities consisting of rounded irregularly placed elevations seldom rising more than ten to twenty feet above the general level surface, and ~~bottom~~ and slightly depressed flat bottomed valleys or basins. The ~~surface~~ ^{altitude} of elevation between valleys & elevations seldom exceeds ~~not~~ twenty feet, and often will not exceed ten feet or considerable areas. The original growth of long ^{valley} bottom pine has now been largely removed.

A superficial covering of sand occurs throughout this section.

In color this sand is prevailingly ⁷²
pale yellow. In places it becomes
much lighter ^{than grayish} in color, while
elsewhere owing often to clayey impurities
it ^{at times} ~~becomes~~ is of a deeper yellow. In texture

this sand is rather fine, approximately
one half of it will pass through a
line mesh, while relatively few
grains are too large to pass a
mesh. In shape the grains are
rounded angular. The accompanying
illustration ~~gives the~~ indicates the
shape, and size of the sand grains
as found in our
onshore sample.

In thickness the superficial sands
vary exceedingly. Locally the underlying
limestone or other formations may
project to the surface the sands being
absent. The onshore thickness of the
sand is possibly 5 to 8 feet. In some
exposures however thickness of fifteen
to ~~20~~ twenty feet may be obtained.

Beneath this mantle of sand one ⁷³
finds usually altho not invariably
a ~~red or clayey sand~~ sand with
a ~~sufficient~~ ^{variable} admixture of clay.
The prevailing color of this clayey
sand is red, altho other colors
particularly purplish, gray, & pink
occur. Locally clay lenses
comparatively low in sand
are found. This clayey sand
~~from~~ stratum is commonly
referred to by the phosphate
miners as "hard pan".

The texture of this material is
variable. Locally it may be com-
paratively coarse, and in places con-
tain ^{smaller} siliceous pebbles up to 1/2 in or so
in diameter. The thickness is so
variable as to admit of no general
statement. In some localities
owing probably to decay it is
absent. On onshore thickness is possibly
four to ten feet. In some a thickness

120 for 8378
5 mi from road } 74

exceeding twenty feet or roughly
found. The top surface of this
stratum is often sensibly level
over considerable areas. more
commonly, however, the top
surface ^{is irregular.} ~~presents minor~~
~~irregularities~~ These irregularities
are ~~rough~~ ^{not sharp} cut but
are rounded. often small trenches
occur resembling small ditches
erosion trenches. ~~more~~ frequently
larger irregularities occur in the
surface contour.

- ~~26~~ This is 26 or 27 the distance on E.H. road 8.13.5
27. Hutton's Standard No. 2. (75)
closed in July 1909.
4. mi S. E. of Morriston + $\frac{1}{2}$ mi East of
S.H. Dept at Standard.
operating at close of 1909.
28. - Hutton's Standard No. 6 -
west side of S.H. - $\frac{3}{4}$ mi South of Dept
at Standard. operating at close of 1909.
29. Hinnis & Blanton. $1\frac{1}{4}$ mi N. W. of
Julitta. began operating late in Dec. '09.
30. Hutton's Julitta No. 22. About 2 mi
west of Julitta + $4\frac{1}{2}$ mi N. of Hamilton.
operating at close of 1909.
31. Hamellon Phosphate Co. # 6.
S. 24 - T. 16 - R. 8 (near line of S.E. 23)
about $\frac{1}{2}$ mi N. & N.E. of Ricknell Station. Running
32. Hamellon Phosphate Co. No. 10.
just south of Ricknell Station on
N.E. $\frac{1}{4}$ of 26 - 16 - 18 Running.
33. Camp Phosphate Co.
East side of river at Hamellon. closed.
operating at close of 1909
34. Camp Phosphate Co.
west side of river + south side Blue run
operating at close of 1909
35. Camp Phosphate Co.
west side of river + north side of Blue run
closed. operated a few years 1909

36 Schilman and Bene. 76
East of mine in SE $\frac{1}{4}$ sec. 36-16-18
in operation at close of 1909.

37 J. Buchenbach and Co.
Primer mine, East of mine in 1-17-18
in operation at the close of 1909

38 J. Buchenbach and Co.
motion No. 6. South of mine in
1-17-18. Not in operation at close of 1909

39 J. Buchenbach and Co.
Griggs mine in 1-17-18
not in operation at close of 1909

40 Dunellon Phosphate Co.
sec. 1. (called section C) 17-18.
not in operation at close of 1909.

41 Camp Phosphate Co.
N.E. $\frac{1}{4}$ S. 12-17-18
operating at close of 1909.
west side of S. & H. R.R. at $\frac{1}{2}$ mi

42 Camp Phosphate Co.
N.E. $\frac{1}{4}$ S. 12-17-18.
west side of S. & H. R.R. at $\frac{1}{2}$ mi
not

43 See Camp Phosphate Co. 1 1/2 mi South E

44 Dunellon Phosphate Co.
plant on west side of river. hit on
east side in sec. 7 (called section D)
N.E. $\frac{1}{4}$ S. 7-17-19.
Bing report 200 1909. operating at
close of 1909.

45 J. Buchenbach and Co. 77
Sec. 20-17-19.
not operating at close of 1909
on west side of S. & H. R.R.

46 J. Buchenbach & Co.
sec. 20-17-19
not operating at close of 1909
on west side S & H.

47 J. Buchenbach & Co.
sec. 20-17-19
not operating at close of 1909.
on west side S & H.

48 Lutton Phosphate Co.
in N.E. $\frac{1}{4}$ S. 12-17-11
not.

49 J. Buchenbach and Co.
in 34-17-19 of close of 1909.
not operating at close of 1909.
on west side of S. & H. R.R.

50 Dunellon Phosphate Co. #8 in
3-18-19. On west side S & H.
not running.

51 J. Buchenbach & Co. Symp No. 1
S.W. $\frac{1}{4}$ 3-18-19. On west side S & H.
Running at close of 1909.

52 J. Buchenbach & Co.
Symp No. 3. Not No. 1. running.
on west side S & H.

53 Dunellon Phos. Co. No. 9.
not running. on west side S & H.

54 Dunellon Phos. Co. not running.
in 10-18-19. on west side of
S & H. running at close of 1909.

55 Camp Phosphate Co.
act $\frac{1}{2}$ mi E of No. 9. $\frac{1}{2}$ mi N.E.
No. 2. on East side S & H. R.R. for
not in. Not operating at close of 1909.

56

55. Camp Phosphate Co ⁷⁸
Thomas mine on west side AC. L. $\frac{1}{2}$
mi. N. of Felicia. closed & ad 7 1909

56. Dunellon Phosphate Co # 3.
S. W. $\frac{1}{4}$ of S. 14 - 18 - 19, running at close 1909.

57. Dunellon Phosphate Co # 4.
Sec. 23 - 18 - 19. Not running at close
1909.

58. Dunellon Phosphate Co # 12.
S. 26, - 18 - 19. closed for
Christmas 1909. Not yet
reopened Jan 11 1910.
on + intersects S + H. R. R. (just AC.).

59. 2 Buckenbark and Co.
Sec. 26. South of S. P. R. N. 12
on west side S + H. R. R. close 1 fob.
(also west S. A. L.) close midway between +
a little west of S. P. C. 12 + 11.
closed July 1909.

60. Dunellon Phosphate Co. # 11.
Sec. 26. - 18 - 19. on S. + H. R. R. +
just west of track. Running at
close 7 1909.

61. 2 Buckenbark & Co.
Sec. 30. closed in the spring of 1909.
at terminus of S + H. R. R. also
west of AC.!

62. Mutual Phosphate Co.
small plant east of AC. +
1 mi. about south of Howard's Creek.

63. Mutual Phosphate Co ⁷⁹
Plant $\frac{1}{2}$ mi. south of
Fernvale on east side AC.
running at close 7 1909.

64. Southern Phosphate Co.
 $\frac{3}{4}$ mi. S. W. Fernvale. Running
also not taking up work when
ventured Jan 11 1910.

65. Holder Phosphate Co.
Sec.
not running at close 7 1909

66. Holder Phosphate Co
Sec.
not running at close 7 1909

67. Sutton Phosphate Co. # 25?
closed, mpt. abt. Sept. abt. 1 mi
due west of Felicia City.

68. Camp Phosphate Co. about $\frac{1}{4}$
mi. east of south of last. closed.
said to have closed about Jan. 5 or 7.
See about Sutton's Germ mine.

69. Bradley Phosphate Co.
Sec. 28 - 20 - 20, running.

not running
1909. Southern Phosphate Co.
Plant $\frac{1}{2}$ mi. N. E. of Bradley.
Closed. AC. abt. Christmas 1908. other says
about a little in 1908 until abt. April.
In office Feb. 4. - information for this mine
closed March 1909.

1 1/2 mi. N. W. of Pineola, and abt.
4 1/2 mi. S. W. of Floral City, running

71. Istachatta Phosphate Co.
sec. 8. - 21 - 20. running.

72 J. Buchenbach and Co.
sec. 24 - 22 - 20.
running.

73. Schilmon and Bene.
about 1 mi. due west of Bay City.
closed. Ref. about March.
This rpt. noted in office Feb. 4.

One plant on above line doubtful
the rest of B. Co. 73 should be 73 of 74.
(See 46).
Two plants not on west of 73 & beyond.

75. Phosphate Co. Florida.
abt. 1 mi. N. E. of Anthony.
closed or end of 1904.

Standard
Location No. 2, S. E. of Norriston 4 mi.
East of S. A. L. Branch to Standard; 1/2 mi. East of
closed

1. Small pit N. W. of Hunt.
Sole yellow in hue 3 1/2.
2. Yellow sandy clay abt. 6 & 8 ft.
Phosphate matrix of the
usual character. 4 & 10 ft.

Limestone peaks at bottom.
not detected at this level.
On to N. E. side of pit the
matrix goes so high as to crown
out No. 2.

Limestone is exposed on the surface
of frequent intervals from
Norriston to Standard

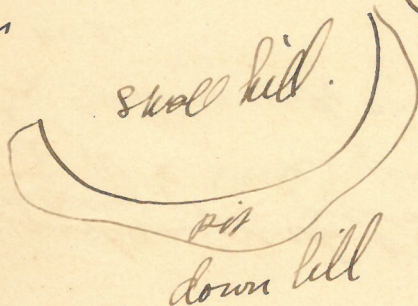
Pit 1/2 mi. N.
Only a little overburden & this
of the usual character.
Phosphate matrix about as
usual. Gray sand on uphill side.
Phos. not 3. film! & show this sand.
Considerable flint.

section in this pit (Plot No. 1)

surf of soil 1 ft
Pls & fls. water. sample
planted. Gas sent to 25"
Limestone. & others.

No evident relation between pit &
hill.

Pit S.E. of plant & near it
Halfway across a small hill
this



Standard
Plant Hilltop No. 6

83

3/4 mi S.W. of Hesper on west
side of S.A. to Eagle mine.
Standard.

Pit S.E. of plant about 20 rods

Pit N. of plant.

Plot with 3 No. 2 & show
method of working & recovery.
Two of the four workers in holes.
Sample of fossils from here.
Fossils run up to 500 or more
pounds.

Section here

1. pale sand 2 x 5 ft.
 2. red sand 5 x 15 ft.
 3. phosphate matrix 10 x 25 ft.
- no trace of fossils observed.

water level is near bottom of pit.
The phosphate at this mine is being dried by
wood. This plant has a three log works.

Dr. H. J. McMillan. Henry Aspinwall.
"Gramps" a serpent.

Two feet hole on hillside near RR
tied N.E. $\frac{1}{4}$ mi of Butters mill (84)
reached phosphat. strata 6 ft +
grey sand. some phosphat. & phosph.
mixed with lime rock.

85
Dennis, Ex. Blount, Gannville,
Supt. M.L. Ferguson, Duluth.
Blount began operating in Nov. Dec. 09
about Dec. 16. 09.
about $\frac{1}{4}$ mi ~~W.~~ N.W. of Duluth.

Phot. rock 3. film 3 of this plant
to show general surroundings
This phosphate is in a valley
water level is 25 ft or so from surface
No limestone expected in pit
None seen in old pit.

Underlain is slight & pale
sand only. Phosphat. strata

as usual.

This plant has two log water flow
Production during 1909 25 tons.

Dutton Zephyr No. 22 plant.

2 + 3 str. Duluth. N.E. W. of
This plant is about 1 m. N. of
but it is at a higher elevation (36 ft)
on comparatively level ground.

Small pit near plant. Pale sand 6 & 8 ft.
Red clayey sand 1 to 8 ft.

Large pit S.W.

very large boulders 6 ft thick 8 ft high 1 1/2 ft
projecting from the bank. Samples &
photo's 5 & 6.

This boulder is oval in cross section ^{at the} length is at least twice the width. On the outside the porphyritic is stained a color a brownish red. Some brownish red is found also near the center. As a rule within the boulder however the colors are free from red staining & are purple, pink, white etc. The largest cavity of the boulder contains specimens come from within the boulder. All parts of the boulder however contain cavities.

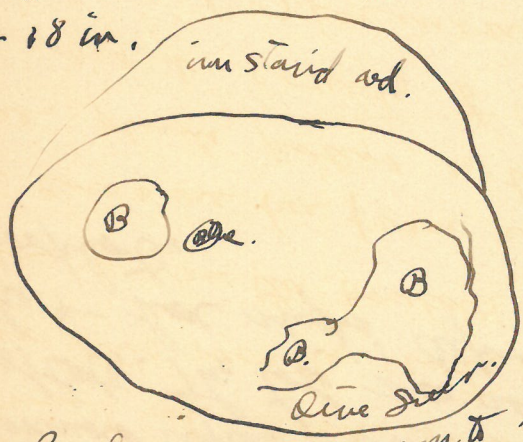
Box 5 - Boulder as seen after 3 cor loob had been taken from the end. Cross section. 6 ft. wide Height unstained but part 4 1/2 ft. along this had but stained 2 ft. Horizontal obs 9 ft.

John Williams, Juliette. One photo of boulder.

Plates 1, 2, & 3 of roll 4, to show this boulder.

Sample in sack 1 to show content of boulder with underlying matrix.

Cross section of Boulder from right to left. on the side iron staining from & draged, ^{3 in.} followed by hard rock with irregularly occurring small cavities partly filled with purple ore. Green & orange green, also 18 in.



The large cavities seem to have the brownish + red + yellowish porphyritic pieces marked + at the low bottom of cavity. This noted 0 to show top of cavity

The largest cavity seen in this 88
folded was 6 in high by 8 in wide
& 1 ft beneath bed. In this cavity
the bottom was smooth and $\frac{1}{8}$ in
of laminated deposit of white marl.
phosphate. The top was very irregular
like & had slight deposit of
phosphate.

as a rule a cavity or roughness ²⁰
 smoothest below. The filling up
 goes on on the lower side chiefly of
 the cavity.

Piz in which boulder occurs.

1. Pale sand sloping with the hill
 and deepest on down hill side 4-10 ft.
2. Red sandy clay alt 12 ft.
3. Phosphate matrix 25 ft.

~~See Illness~~ Phosphate Co.
~~Illness~~ Hopkins, mag.

Chas. Tullis, Remellon

H.R. Keister, Rockwell.

Cott. Ingles John Mrs.
 Barker Sec. & Treasurer
 A.G. Bigelow Gen. Mgr.

Cuehacho Bros controllers, New York.

Plants in order south from ²¹
 Remellon.

+ V fl & c. No. 6 on Sep. ²⁴ 23. T. 16 B. 18.

+ V fl & c. No 10 N.E. $\frac{1}{4}$ of 26 T. 16 B. 18
 T. B. & Co. S.E. $\frac{1}{4}$ of 25 T. 16 B. 18.

Remellon in 30.

Camp in 3 of River in 85-16-18
 Amick J. Corp or north of Blue River

+ River in S.E. $\frac{1}{4}$ of 26-16-18 N of River

+ J.B. & Co. north of River in 16-17-18

+ J.B. & Co. in south of River in 16-17-18

+ R.P. Co in S. 1 " in 16-17-18
 called sec. 1.

Camp two miles in N.E. $\frac{1}{4}$ of 12-17-18

+ R.P. Co. sec. 7 in N.E. $\frac{1}{4}$ of 17-18-19
 south of river.

J.B. & Co. East of river in
 N.E. $\frac{1}{4}$ of 7. 17-18 (called main).

J.B. & Co. in S.E. $\frac{1}{4}$ of 18-17-18.

Three miles on Sep 20.

J.B. & Co. in S. 20. -17-18.

Hutton ²² in N.E. $\frac{1}{4}$ of 29-17-18
 among others of 10-20.

Hatch in 30, 17-18 not in 18 or

Corson & Sexton in S.W. $\frac{1}{4}$ 83²
17-19

GP. & Co. in 34-17-19 ^{Chad in}

Q.P. Co. in S.W. $\frac{1}{4}$ 35-17-19

Geo in N.E. $\frac{1}{4}$ 73-18-19

Q.P. Co. #8 in 3-18-19

GP. & Co. Syn in S.W. $\frac{1}{4}$ 8-18-19
^{run in the blue 1302}
^{syn. no. 3 runs 3.}

Q.P. Co. #8 in S.E. $\frac{1}{4}$ 3-18-19
^{Comp. Plo. co. Citrus place}
^{Any 4 geol. clod down or east of 999}

Felice in S.E. $\frac{1}{4}$ 715-18-19

Q.P. Co. #5 in S.W. $\frac{1}{4}$ S. 14:8-19.

Q.P. Co. #4 ^{Smith 14-18-19}
^{No. 5. 23-18-19}

All down to Felice.

Comp. Plo. Co in 11-18-19.

No. 2 is close to 85 & P. Nth.
in 10-18-19.

No 11 in S. 26-18-19

No 12 .. S. 26-18-19

No. 1.

93

Blumellon Plo. in No. 6 gives a good exposure of the round pebbles which occur at the top of the phosphate stratum. This is seen best in an old cut south of the present pit.

In this cut is seen also redish clayey material lying beneath this round pebble top, that is within the phosphate stratum.

In the pit the form which our funder is now being removed a section about as usual is seen this is as follows. Sand & wil and red clay 2 to 10 ft.

Phosphate (exposed) 15 ft.

Phosphate sand & rock at least 60 ft.

In the old roadway I find also an exposure which exactly matches that ^{above} the railroad, near the crossing of the dummy bubble road about 4 mi. N.W. of Tollaume. This is certainly interesting this

the water level in this pit 94
is something like 20 ft
from the general surface.

The gray sand colored to
pinkish upon exposure is
seen in the old roadway.

95

Lunellon Phosphate Co. No. 10.
This is the first hard rock worked &
this plant has been working
continuously for about 20 years.

Plates roll 4. Nos 5 & 6 are of
this pit. No 5 to show down
among outcrops. No. 6 to
show dredge run, deep plate.

Camp Phosphate No.
mine at Lunellon.

Lunellon 10 visited. Feb. 18. 1910.
Flint boulders in the dump all contain fossils, or the
cavities in most ones left by the fossils or holes have
dissolved out. Many of the flint boulders are hollow.
Some contain clear water. One found to contain
a dark liquid like oil (Sample). seems to be
finely divided suspended material (iron oxide?) or
sample filter clear. Stalactite seen in
flint boulder and stratified deposit on bottom
in phosphate boulder. Some boulders polished
throughout & showing concentric growth. Some
stained iron red along cavity lining.

Sample to show strata & 86
bottom of county deposits taken from
fold 1 x 1 1/2 ft. in cross section.
The county being about 3 in wide.
Other material seen from this pit
includes, water worn road stones
clay balls. Phosphat. balls, etc.

with regard to percentage of phosphate
in the matrix M. Chas. at thinks that
the Russell citrus county mill
average 16 to 18 or 19 %.

In the Kenbury section the
average is lower being about 10 %
The large pit at Cummer 25
containing 20 per cent. averages only
9 %. The Cummer co. ordinarily
will not mine under 10 %. This pit
is minable since hydraulic lift
is used.

Cullens River mine on East side of 87
range in S.E. 1/4 of S. 36 - 16 - 18.
Cullens dredge is working into the N.E. side
of the range fork. This mine known as the Ross
mine. This mine operating at the close
of 1909.

J. Buckenbach and Co. mine E of
River in 1-17-18. This mine operating
at the close of 1909. A dull hole at this
mine gone according to the Supt.

Curbarben (Sond etc)	17 ft.
white or light colored phosphate	45 "
Brown or reddish brown phosphate	10 "
black or black phosphate	10 "
Brownish dark calcareous clay	10 "
limestone rock.	

The exposure in the pit is much as
usual for the Russell section. Pale
yellow sand, only a little hard brown.
Top of phosphate stratum here unmined.

J. Buckenbach and Co. Griggs mine
in sect. 1-17-18. South of River.
Closed June 1909. on S. 8 & 14 R. 1.
East side of track. Pit gives pale yellow
sand 15 to 15 ft. the phosphate
water level here about 15 ft.

Shunellon Phosphate w. Section 1-17-18^{PP}
 T. B. Baker, Shunellon, Sept.

Closed in June or July, 1909.

This mine dredges into the bank of the river. The pit gives no sign of phosphate. mine is on west side of the river.

Camp Phosphate co. Two
 mines in N.E. $\frac{1}{4}$ of 12-17-18. These
 are west of S. & H. R.R. about $\frac{1}{2}$ mi. or so.

Shunellon Phosphate co. N.E. $\frac{1}{4}$ of Sec 7-
 17-18. known as Sect. 7. The plant for
 this mine is ^{west} north of the river. The
 dredges are working on the east side
 of the river. The plant is $\frac{1}{2}$ mi. or so east of
 S. & H. R.R. This plant found in the spring 1909.
 about April. In operation or closed 1909.
 The river banks here are low 8 to 10 ft. There is
 no ore bed or only a few of pure white
 sand.

About

Mr. Bystia's collection contains 100
 An elephants tooth taken by him
 from the old J.B. & Co's mine
 6 miles. Sec. 1-17-18. In
 the blueplate matrix 30 feet
 from the surface. A considerable
 number of other bones were found
 with or near this tooth. One of
 the vertebrae, Two heads of femurs, One
 foot bone. Two other pieces of
 the elephant tooth. All taken
 within two or three miles.

This collection contains also
 eight (8) pieces of limestone
 shell bearing now phosphatized
 to 80 to 84 %.

He has also pitufel wood
 from mine.

J.B. & Co.
 Sect. 35. south of Hernando. about 8 mi.
 26. about July 12 09. south 7th.
 crown very large.
 culler did not see 09
 at end of year & very
 River Sept 1 & 3 & Crown.

Williams Phosphate Co.

one plant about 1/2 mi. S of Murrow
 took no rock from the ground during 1909.
 although worked some at the close of 1909.
 Pit about as usual, little or no hard pan.

Southern Phosphate Development Co.
 1/2 mi. N. of plant. Murrow.
 C.P. Sowers, proprietor

The average depth to limestone on the
 tract being prospected is 75 ft.
 Extreme depth exceeds 187 ft. This
 drill hole was superficial road about
 white a day and to 100 ft
 phosphate 72 ft.

The depth to limestone or thickness of the
 phosphate varies between 50 to 100 ft.
 with a maximum of possibly 200 ft.
 This compares for one plant on east
 central part 19-20. Two plants both
 about as usual for this county, no limestone

L. Buckenbuck & Co. Synd. No. 1 ¹⁵³ ^{Place} ¹¹⁰⁵
Running - large fish & usual. Plot 5
to show sand. in center plot 1 ft.
Photos #2 1 m. will ^{no 6} show clay
lens in one ft. of the plant.

L.B. & Co Syndet 3 running

Dunellon Phosphate co.

No. 8 not running.

Pit shows about as usual.

Top of the plot station irregular

No. 9 not running.

sample of soft white matrix
from Pit No. 8. plot 9.
Dunellon co. Oct 3 5 ft.

S. P. Allen, Holder. Fla.

Allen says carp less.

Dunellon 3. set 12 x 6 in. 3.

also some fish in run. etc.

running now.

comp also mine on east side &
near S. & H.B.B. not running.

Dunellon Phos co. No 2.

103

Running - mules & scots being
used to remove overburden.

Camp Thomas mine - just
west of A.C.B. & a little
north of Felicia. Not running.

Gives a yellow clay with fish bones
bottom. Top of phosphate station
fair even.

Dunellon Phos photo #4.
The large fish north of plant
gives an exposure of limestone in
place. The Vicksburg not decols -
samples taken.

Dunellon Phosphate Co No 3

Running at close V 1819 - pits running
about as usual.

at Floral City reports this 7 miles. 104
worked during 1909 as follows. in order

Comp mine closed Oct 20. 1899
located about 1 mi S. W. Dodge over first.
Lutton's nearly 2 miles due west 1 mi. 9 1/2 mi.
closed and v. 209. but not yet opened. Dodge
Lutton's gem mine south west.
closed. may not be open.

Bradley Pls. co. running now.

Southern Pls. co. just west of Bradley.
closed off after a year. 1899
near dry mine.

Mutual co. one mine 3 1/2 mi. S. W. S. E.
running over burden run 1909.
will continue Dodge
Dodge or under + the Dodge
gate to the Pls. co. about 3 mi S
W. of Bradley. about 6 1/2 to 7 mi S. E. of
about 4 1/2 mi N. W. of St. Charles.

Lutton #25 - about 1 mile due 105
west of Floral City. Closed at end of 1909
Said to have closed about Sept.
to be reopened soon.

A Dodge mine. Pole S. E. +
phosphate stratum about as usual.

Camp Phosphate Co.

Mine 1/2 mi east of south of Lutton 25.
This plant is said to have closed at end of 1909.
1909. at mine of Dodge. The overburden
is removed by steam shovel. The
conditions of phosphate stratum are said
as usual. about 10 ft. below surface.
Top of phosphate stratum fairly even.
The soil above this is seen at top
of the phosphate. 8 to 10 ft. of the
phosphate stratum is removed as
overburden.

Bradley Pls. co. Plant on Sept. 28.

20 - 20

This plant used Dodge. water level
is 12 to 20 feet from the surface.
overburden phosphate is 15 to 20 ft.
The overburden is removed by pump.
Phosphate is dried by steam burning.
Electricity is used to run the pump.
This plant is mining in a distinct valley
hills both east + west.

106
Southern Phos. Co. Gem mine.
Not working at close of 1909. Closed
early if not at all in 1909.
Drops used (now runs, water level
close to surface 20 to 25 ft.
Phosphate stone used is usual.

Southern Phosphate Co.
Plant $\frac{1}{4}$ mi N.E. of Bradley.
Closed. Bradley says obs. chert
1908. Rept. in town at April 1909.
This was a dry mine.
under present 4 to 10 ft.
A part of the phosphate strata
amounting to 386 ft and
removed as overburden
water level about 25 ft.

107
Isaiah Ph. Co.
Plant on sec. 8-21-20.
in valley. water level within 4 ft of
surface or lower phos. Phosphate
not seen. phosphate cut out.
Plant taken up by Dodge. Closes
& then taken to ~~mine~~ ^{mine} by
pump. Pump used for overburden.
Not running when seen Jan 12, 1909.
Removing overburden. Limestone, closed for
with a short time before chert.

Mutual Phos. Co.
 $1\frac{1}{2}$ mi N.W. of Pinedale, $\frac{1}{2}$ mi S.W.
of Treadwell. 2 + a little more of phosphate
phos. Co. ledge. Pale sand & phosphate
strata as usual. Dredge at 58 ft.
Not running when seen Jan 12, 1909.
Closed temporarily.

Mine of phosphate, Anthony. Feb. 3, 09.
Closed. Said to have closed in May 1904.
at $\frac{3}{4}$ mi N.E. of Anthony.

Limestone shows fossils in chert zone as
elsewhere. also rough solution below
the water level as elsewhere. A feature
is the number of round holes. natural wells?
one of these seen in cross section given.
2 ft hole at top tapering to bottom 15 ft
deep. Fossils are usual as usual.
Below water level fossils mostly dissolved.

Feature of phosplate matrix¹⁰⁸
high proportion of plate needon-
eally accumulated. Small
amount of boulder chemical
accumulation; absence of flat
boulders, absence of limestone
boulders. In that predominance
of ~~Chemical~~ mechanical accum-
ulation over chemical fraction.

The phosplate matrix is
otherwise not unlike that seen
elsewhere in the hard rock section.
that is with increased amount of
clay near the top. top surface
entirely irregular (photo 5) +
tendency to stratification (photo 6)
The original stratification is
by subsidence between gaps
solution holes in the limestone
one such subsidence occurred
since part of our boulder
was removed.

Pale sand as usual + 1 to 1 1/2 ft. dup.
Section Pale sand 5th. phosplate strata 10 ft.
limestone at bottom.

At one point the limestone comes up
to the present surface. The phosplate does not.

Record of photographs in the Hard rock section.

Roll No. 1. Dec. 19.

Film 1. - Section Spakmon No. 2.
to show unconformity between
between pale yellow sand + phosplate
stratum.

Film 2. - Cummer Plos. co. No. 3. to show
unconformity between red clayey sand
and phosplate stratum.

Film No. 3 - Cummer No. 3. to show uncon-
formity

Film No. 4. - Cummer No. 3. same.

Film No. 5 - Cummer No. 3. to show phos-

Film No. 6 - Thompson Plos. co.
Pondence No. 8 and No. 9 Thompson.

Roll No. 2. Thompson Plos. co. Pondence

Film 1. - Thompson Plos. co. No. 25
to show limestone peak in
abandoned washed out pit. 9nd.

Film 2 - Central Plos. co. No. 25
to show streak of sand interbedded
with phosplate

Film 4. - Mutual Plos. co. 5 B.
to show ~~red sand~~ of pale yellow + red
sands. No good. black.

Film 5 - Mutual Plos. co. 5 A. to show soft
part of ~~red sand~~. No good. black.

Film 6 - Cummer Plos. co. # 2. to show
contact of phosplate and lime.

Roll No. 3 -

110

Film 1 - Hutton's Standard No. 2
to show the gray sand in the
old pit $\frac{1}{2}$ mi N. of plant.

Film 2 - Hutton's Standard No. 6.
to show method of working in the pit.

Film 3 - Dennis and Blanton.
to show plant & surroundings.

Film 4, 5, and 6. Hutton's Julette #22.
to show boulders in pit.

Roll No. 4 -

Films No. 1, 2 & 3. Hutton Julette #22.
to show boulders.

Film No. 4 - Hutton's Julette #22.
To show general view of pit in which
boulders are found.

Film No. 5 - Dunellon Phosphate Co. #10.
Removing our burden.

Film No. 6 - Same to show dredges.

Roll No. 5 -

Film No. 1 - Bygones - Dock.
House.

Film " 2 & 3. Bygones
House.

Film " 4. Henry & horse.
Film No. 5 - J. Buchanan & Co. Synd. #1.
to show sand in central part of the pit.

Film No. 6. J.B. & Co. synd. No. 1.
to show a clay lense in pit.

Roll No. 6.

Film No. 1. 2 Buchanan & Co synd #1.
to show clay lense in pit.

Film No. 2 - same.

Film No. 3 - Dunellon Phosphate Dev. Co.
to show drill outfit used in prospecting
drill of C. P. Savory.

Film No. 4 - Dunellon Phosphate Co. #11
to show old large pit. Near in back yard.

Film No. 5 - Bradley Phosphate Co.
to show dredge, plant in the back yard.

Film No. 6 - J.B. & Co. Crown mine.
view of dredge & plant.

Roll No. 7.

Films 1 & 2 to show well-dredging machine
of Huggs Specialty Co. 2x. 4x. or 8x5 Arm.
sunshine a little hazy. No. 1. stop 8. snap
No. 2. stop 16. snap.

Films 3 & 4. Phos. as he I buda pit
to show limestone. 278P cloudy or
white sunshine stop 16. time 2 sec.

Film 5. Same mine to show relation of
our burden & phosphate stratum. 14 time 2 sec.

Film 6. Same mine to show limestone
in phosphate material. stop 22 time 2 sec.

Additional on photo not mine. The largest
quartz material from this mine is very small &
includes only small sand rocks 1 by 2 3 in.
no large boulders of any kind. The ore may be
crushed in slight & includes the best material
pieces of plate rocks. The plate rock the
largest seen was 1 x 6 x 8 in.

Jamison says he has seen 112
plates as large as $1\frac{1}{2}$ by $1\frac{1}{2}$ ft by 2 or
3 in. The largest boulder seen by me
was about 150 # being a light
colored boulder rock. Slabs of
the common species & monotype
were seen. About 30 % of the rocks
is pebbles Jamison says.

Roll 8. -

Nos. 1 + 2 in pit of Alcala lime co.
2 mi south of Alcala. to show
residual material filling surface. taken on
a dark cloudy day. Stop 16. exp. 3 sec.

No. 3 - closer view of No. 1. exp. 4 sec.

Nos. 4 + 5 - Pit of medulla phosphat co.
west side looking east

No. 6. Sand-clay lime cliff with
phosphat in some pit No. 7 of this place.
Some pit on 4 + 5, closer view.

Roll 9.

No. 1. 8-clay lime dipping into phosphat in
pit No. 2 of medulla phosphat co.

Pit of phosphat rocks of Crown co.
" 3 + 5. To show unconformity
in pits.

No. 6. contact between lower
sand & gray sand.

Roll 10.

No. 1. 1 + 2 to show unconformity
in pits.

No. 3. Standard pit. contact of 113
yellow & gray sand.

Nos. 4, 5, & 6. - Special difficulty in
preparing for Land pebble exp. 3, 4, & 2 sec.
cloudy day.

Roll 11 -

Films 1, 2, 3, 4? Exp of our boulder in
pit No. 5. P. R. Co.

Films 5 & 6. Our boulder in pit of
Fla. mining Co. Mabury

Roll 12.

Film 1 + 2 to show rough top
surface of marl in Pine Bluff. W. pit.

No. 2. To show sink or slump in pit.

No. 4. to show old stream bed

No. 5. Same.

No. 6. Pit of Armour Testifier Co.

Roll 13. No. 1. - Pit of Fla mining Corporation

Acid phosphate from the mixer
would show, insoluble phosphoric acid $\frac{1}{2}$
water soluble $\frac{1}{8}$
soluble in citrate sol $\frac{1}{10}$

after two months standing under
water. obt. $\frac{1}{2}$
water sol obt $\frac{1}{5}$
sol in citrate sol. & water obt $\frac{2}{10}$

Sample of limestone clayed
& plastered over by H. Kent
some other 84.

R. W. Clauson
~~residence~~ Tem.
Ashwood.

Sister
you let
this gentleman

have all of the
shark tooth you
can find in the House
your Gushen
Wm. Rensell

Expense -

Dec 10. B. & Hight way	.50
Envelopes	.00
Dinner for self & dinner of Anna	
No. 3 Commiskey	.60
for B. for dinner or more	.20
Dec 10. Dinner for self & dinner of Anna	.70
Living line (A. M.)	0.50

Mr. Monro. Sath. No. 4 & 5 A. P. Co.
 nplem. Abbot's Vogt. Vogt.

