Elevations at Lake City 1

M. S. Eng. 203.20

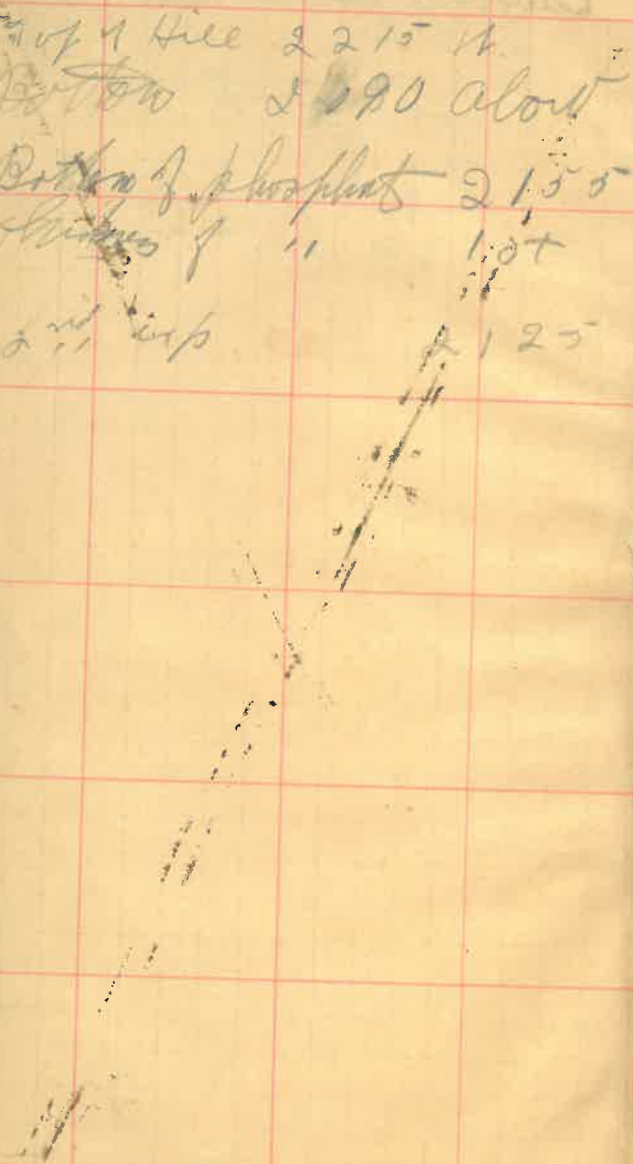
~~165. G. S. & F.~~
203 M. S. Eng.
201 A.C.L.
168 G. S. & F.

Top of Hill 22 15 ft.
Bottom 2 90 alert
Bottom of phosphate 21 55
[illegible] of " 1.04
2nd [illegible] 21 25

25; Chair Tall 50, R. 70; Hot Tall 25
[illegible] 75

R. 75; S. 50; Ticket S.C. to Genevieve .80, [illegible]
S. 50, L. 75; B. 50 Ticket [illegible] 25; Chair car
[illegible] 40. [illegible] Chair & [illegible] (St. car .20) (L. 75)
[illegible]
Ch[illegible] 25; S. 50; L 1.00 (S. 50. L 1.00)
[illegible] .50 [illegible] .25; T[illegible]
(B.

L. R. .75; S. 50; Ticket [illegible] City to [illegible] .80
[illegible]
[illegible]; St. car .20; [illegible]
[illegible] 75; Transfer .60, R. 85; Chair car
[illegible] 1.00
[illegible] car to Sanford 25. S. 50. L 1.00
[illegible] 25, Tel. [illegible] .25; S 50 L 1.00
[illegible] 2.00, S. 50. [illegible] 25. [illegible] 75
[illegible] ( ) 2.00,
[illegible] ( ) 2.00
[illegible] .75, Hack 25, [illegible] ( )
[illegible] ( ) 25.00; S. 50
[illegible] S. 50 Transfer at [illegible] 25 L. at [illegible] 50
[illegible] Chair car to [illegible] 1.50 Hack 25
[illegible] car [illegible] 75. S. 50. L 50
Hack Tel[illegible] 25
[illegible] L 50. Hack 25
[illegible] S 50.
[illegible] 50. [illegible] ( ) 1.50



4 Gainesville

water in Alachua sink march 11
3 ft, 1 1/2 in. below base mark on log.
or
4 ft 3 in from top mark on waterboard.
or, about 6 in from bench mark on the small log.
actual level of water

water in mill & city mill 3/11
2 ft. 6 in from top of pipe
water in small well. 36 ft 3/8 in
from top of pipe
actual level.

These measurements allow about
1/2 in. for creep on wooden stakes used.

Sections on Calcareous bluffs

1. at cut used by Government
1/2 mile below Gardiner.
2 The dip here is to the east
about 2 ft. in 20 ft.
8. sand at the top of the bank.
7. shell layer 2 to 3 ft. lying with
irregular contact on Pleurobis beds.
apparently not an unconformity but
local variation.

6. Pleurobis beds 1 1/2 to 2 ft.
5. shell layer conf. with above 6 in.
4. unconformity
3. concretionary and sandy layer 1-3 ft.
2. marl and shell 1 ft.
1. Blue clay. no fossils 3 ft.

A section 20 feet below above
where no 7 is absent, and Pleurobis
beds reach a thickness of 4 ft.
crowding out shell.

This is the typical section from
bluff to Gardiner.

The above section is obtained
by following the river about
2 miles.

The green clay of above appears
first a little above this exit

what rock?

6

The rock disappears one or two miles above Alva. Its dip to the west carrying it beneath the water of the river even at low stage.

A rock apparently consisting of alternating layers of thin limestone on shale and two with 2 in to a foot of clayey material was observed at about 1 mi above Hillyards. Midway between Hansford + Ft. Devault.

Sect. at Ft. Devault.

(3) Sand at the top of the bank 2 ft
(2) Shells with some Planorbis 2 ft
(1) Concretionary stratum from water 3 ft.

Sect at Rock Bend.

(2) Some sand on top.
(1) Concretionary stratum water to 6 ft.

Only a short distance above this a shell stratum comes in on top of the concretionary layer, or in a rare case some.

Sect. at Hendry's Landing

Sand at the top of the bank.
Concretionary stratum very rude 8 ft.
Clay stratum from water 3 ft.

Sect at bend of river ½ mi above Ft. Thompson:

Sand at top of bank
Planorbis bed,
shell stratum (a part of above) 6 in.
Unconformity
Concretionary stratum, upon (2 ft) which at one locality lies a lense of clay. This clay lense is conf. with Conc. Stratum; unconf. with Planorbis.

For next section above this see back 2 pages. Sect at cut.

Sect next above cut.

Sand beds 2½ ft.
Shell stratum 2 ft.
Concretionary stratum 2½ ft.
marl with shells 1 ft.
Green clay at water edge 1 ft.

a shell stratum here to here the place of the Planorbis layer.

 Sect. ½ mi above Lovells.

Shell 2 ft.
Planorbis stratum
Shells
concretionary stratum
Sandy clay and blue clay

2nd sect. above Lovells
Planorbis stratum with large
worn rock fragments with fossils.
unconformity,
Sandy clay
Blue clay.

Sect some distance below
Gardners landing shows
pliocene shell stratum 4 ft.
on top of concretionary layer,
apparently a lense of shells,
a thin sandy limestone at the top.

Coleus hill[?] Section
Coffee [illegible] to Alva.
muck 2 ft.
Sticky greasy clay (at least) 2 ft.
unknown.

Shell stratum with thin limestone layer
at the top (at least) 2 ft.
unknown.
Sticky clay like m. and with
Planorbis as fossils (at least) 2 ft.

much variable 0 to 2½ ft.
Sticky clay with Plonorbis about 2 ft.
Shells stratum variable 0 to 3 ft.
Loosely cemented sand lime with some 6 in.
Limestone of H. Thompson with
sand shells & Planorbis 1½ to 2 ft.
stratum of shells & marl variable 0-6 in.
Plonorbis beds 0 - ¾ ft.
shell stratum 6 to 4 ft.
unconformity.
concretionary and sandy clays 1-3 ft.
marl & shell 0 - 1 ft.
Blue clay no fossils to
Tiger colored clay up to ? ? ft.

Dip is to the west down the river
as a whole. Local variations

1908

From the examination of the Calera-Labelle section north 19-24 it appears that the rock dips in general from a little above Labelle to the west disappearing above Alva.

A concretionary stratum is constant throughout the entire section. It is seen first a little below the rapids of R. Thompson and disappears as mentioned above Alva. It is variable in thickness from 2 to 9 ft. It is variable in character from sandy to very hard with many irregular concretions and developing into very rough and irregular surface. Cysts fossils occur in this stratum, as does also localities of Rostellites. It is as rule fossiliferous although rarely abundantly so. In places it is non fossiliferous or nearly so. Elsewhere it contains coals, large clams, etc. a most stratum

Below this stratum is a clay formation which is often a little sandy at the top, and blue & light yellow brown below. It is stratified. The best exposures are seen one to two miles above Labelle where about 80 ft are exposed.

If disappear about 1 below Ft. Thompson. This clay grades above into the concretionary layer. It is not of general occurrence locally at the bottom of the concretionary layer.

In the upper part of the section between Labelle and Ft. Thompson an unconformity occurs at the top of the concretionary stratum. This is well seen about a mile above Labelle & the cut made by the Government just below Ft. Thompson. In this section a stratum of shells about 6 in in thickness succeeds the concretionary layer. This shell stratum grades into the Pleurobis bed. The unconformity here is between Pleurobis with its basal layer of shells and the concretionary layer. Evidence of the unconformity is seen in (a) eroded top surface of conc layer. (b) Pleurobis bed & shell stratum filling this irregularity (c) large eroded rich pieces & small

concretions at bottom of Pleurobis bed with its shell stratum.

Following up the river this unconformity disappears about the beginning of the Pleurobis limestone (?)

Following down the river where the unconformity does not appear beyond the east of the Pleurobis beds.

The main Pleurobis bed is an imperfectly cemented stratum of 2 to 4 ft. It is best developed from the rapids to nearly to Labelle. It is variable in thickness locally and is even replaced entirely locally by a shell stratum. the Pleurobis beds sometimes terminating suddenly. At the bottom as has been mentioned a shell stratum of about 6 in occurs. This shell stratum is a part of the Pleurobis beds and Goads into it. Between the Pleurobis beds including the shell stratum and the underlying concretionary layer there is as mentioned an unconformity in the sect. between Labelle and ½ mi of Ft. Thompson's

Upon Plionolis rests a shell shale. This is also of irregular thickness. At the rapids this stratum scarcely exceeds six inches & a foot. Down the river it thickens from 2 to 4 ft and finally replaces the Plionolis beds about Lobelle. It possibly it should be said that Plionolis pinches out between the underlying and the overlying shell strata.

In all that part of the river below Lobelle this shell stratum forms the top member of the section (except the sand of the top)

At the rapids and for about ½ mi below a Plionolis limestone lies just beneath the rapids about 2 ft of shell. finding here the top of the section.

The lowest member of the Calcosphaerina section observed is the ~~Lobelle~~ a shale to which the term Lobelle shales is applied. These shales are best exposed at and above Lobelle for a mile or so. The upper part of the shale is somewhat sandy grading into the stratum above. The lower is more plastic and often has a greenish color. The Lobelle shales are bedded. Their exposure in the Lobelle region is the result of an anticline which is greatest about one mile above Lobelle, there bringing the shales as much as 80 ft above extreme low water. Aside from the main anticline there are numerous smaller folds so that the dip of the shales may be locally either to the east or to the west. The shales are seen at low water ~~up~~ up the river as far as within about ½ mi of old ft Thompson. Down the river they disappear before reaching Alva. They are non-fossiliferous and are unfavorable with the

Generalized sections along the Calasahatchie.

Section typical for the fork between Labelle and Alva. There are minor faults and the section is not seen complete at any one locality. Down the river the dip to the west carries the lower members out of sight.

Sand and soil at top of bank	1 to 5 ft.
Shell stratum	4 ft.
Concretionary stratum	8 ft.
Shale " at & below water	4 "

No unconformity is found in this section.

Section for bank from ½ mi above Labelle to ½ mi below T. L. Thompson.

Sand and soil	1 – 5 ft.
Shell stratum	2 – 4 ft.
Planorbis beds	2 – 4 ft.
Shell stratum	½ to 4 "
~~ unconformity	
Concretionary stratum	2 to 5 "
Shales bedded (water edge)	0 to 10 ".

Section at Rapids.

Sand & soil very meager.	
Shell stratum	2 ft.
Planorbis limestone	1½ to 2 "
Shell stratum	½ to 1 "
Planorbis beds	2 to 3 ft.
Concretionary stratum to water	

no unconformity was observed in the sections of the rocks.

The history of the region would seem to have been as follows.

The shale at the bottom of the section and the concretionary stratum above were formed continuously, the shale being formed in deeper water. The concretionary layer in more shallow water in which oyster bars, angel wing bars, corals, and clams abounded.

A slight elevation of ~~the~~ that part of the section from ½ mi above Lobelle to ½ mi below the Thompson above water. To the west of this small land area conditions favorable to the growth of marine shell beds resulted and the shell stratum forming the top of the section resulted.

To the east of the land the conditions were such as to permit the development of Pleurotus in abundance. The land area was resubmerged

History of region.

medium deep water in which was formed the shales common to ~~the~~ all parts of the section. These are the Lobelle Shales. As the shales formed the water became, possibly ~~from~~ by silting, more shallow, the top shales becoming sandy.

Further shallowing of the water resulted in the formation of shoals, oyster bars, angel wing beds, clam beds, etc. The top surface was irregular from the drifting currents and for a short distance ~~also~~ between Lobelle and the Thompson may even have been for a time dry land. If not dry land the currents were at least sufficiently strong to roll into the depressions various sized pieces of rock up to 10 or 12 pounds just above Lobelle.

It seems probable that the section ~~above~~ Lobelle to the Thompson was elevated more there than elsewhere. At any rate diverse conditions were introduced. Below Lobelle an abundant shell life flourished continuously forming the shell stratum which then forms the top of the section

above Lobelle the conditions were such that Planorbis flourished more than below forming the ~~Planorbis beds~~ a shell stratum, a Planorbis limestone and finally another shell stratum at the rapids. while between Lobelle & Ft Thompson there was formed a shell stratum. Planorbis beds and another shell stratum.

Exam. of stratum holding bone remains along Sarasota bay.

Loc. at Mrs Hanson's place

Only a small amount exposure occurs here of the bog iron ore. The stratum is perhaps a foot thick & rests on a very hard sandstone. This latter is mostly non fossiliferous but has occasional shells, and in places numerous fragmentary shells.

Loc of Judge Webbs.

The bog iron ore here is 1 to 2 ft thick. It is a coarse conglomerate having many rounded pebbles as large as the fist or larger. Also in localities many much water-worn bones, manatee ribs, etc. The rock is coated and cemented by iron oxide. No invertebrates were found in it. A paddle bone found at Mr. W. L. Webb prob-ably eroded from this stratum as it has the characteristic ~~of~~ color. A vertebra from the same place may have come from the sand rock just above which has black bone fragments.

No evidence was found to prove the skeletons in this bog iron are as very old. 1st. The bog iron itself may not be old, no fossils having been found in it to place it. It appears however to underlie the slight elevation referred to on the next page.

2nd The skeletons found in the bog are may not be as old as that formation. For skeletons buried in such a sand though which iron waters are percolating would quickly fossilize.

3rd The pebbles of the formation as mentioned were rounded. while the skeletons are not. Therefore probably the skeletons were buried in the sand after its elevation and previous to its consolidation.

the Pleistocene locality on North Creek. - About three feet of shell is exposed here reaching from water level at medium high tide.

An elevation of the coast at the end of Pleistocene of 40 ft is indicated by the shoalium which is now inland a mile or so and is above present tide. (f) also by shell strata cemented to rock at Blackmans landing about 5 mi south of Esperanza. This shoalium is 3 to 4 ft thick and stands above tide. (c) also the bays forming the little Saanich bay are as much as 150 to 200 ft high and indicate elevation since the shells were piled up in place.

2° Gypsum deposits on Bear Island, 6 mi. w. of Ponassoffbee
Reached these dune 2½ mi west & walk following old town 3½ mi. Very bad walking. Deposits in form of fine Gypsum & rock gypsum, no crystals. Samples were taken

Muck of Ponassoffbee.
The best muck is found around the edges of the lake in the saw grass. That in the lake and in the stream, leading to the lake is safe of shells that it is of doubtful value.
Investigation of muck here should consist of sounding to determine depth and of samples to determine quality.

See Loundermilk about—
Bartram, Travels, Phil. 1791, sheep. $12.00
10th Census, Building Stones unbd 2.50
Smith & Hilgard Rpt. cotton—Pud. 2 vol 4.00
Coast Survey Rpt. 1867, ditto. $1.30
Mem. Amer. Acad. Sci. Vol. 2, unb. 2.50
Agassiz, L. Relation of Geol. & Zool. to dev. of Coast features C. Surv. Rpt. 1867. 1.50
See Phil. Testing Plant,
" Clay testing apparatus.
See Karl Langenbeck, 313 Cornwall

Prof. H. Foster Bain, regarding State survey laws. is in Washington.

Prof. S. Calvin, St. Geol. Iowa.

R. B. Dole chemist in water assay work.
Foote Min. Co. 107 N. 19th St. Phil.
Wm. J. Gerhardt, 209 Callowhill St. Phil.
Dr. A. Hrdlicka, U. S. Nat. Mus.
Dr. E. Kindle, U.S. ~~Nat. Mus~~. Geol. Surv.
Van H. Manning, Dir. Surv.
H. C. Riggs, Acting Director

Office U. S. Engineer.

 Philadelphia

Acad. Phil. Soc. 104 S. 5th St.

Acad. Nat. Sci. Phila. Edw. Nolan.

Wagner Free Inst. J. G. Rothermell Supt.

Joseph Savage, director

Arthur H. Thomas Co. 12th of Walnut St.

Jacksonville

A. J. Mitchell. Sect. Hi. wetherbure

Georgia

S. W. McCallie Atlanta St. Geol.

South Carolina

Sloan. St. Geol. Columbus S.C.

N. Carolina

Prof. John H. Pratt Chapel Hill N.C.

Kentucky
Charles J. Norwood. Dist. Lexington
C. R. Buckley. M. T. Rolla.
A. C. Lane. Michigan Lansing.
H. B. Kümmel. Trenton
T. L. Watson. Geol Virginia Bldg.

Peat of Orlando. 35

In gas.

The peat has about 9% moisture. After sun drying it has still about 18% moisture. When put into the ordinary gas retort this moisture helps cool the carbon. The result is a leakage of gas. No way is known of getting rid of the 10% moisture. To handle it kiln dry it would increase the expense. The gas is given off at lower temperature than coal and the moisture probably could not be driven off without damaging the gas made.

Mr. Payne suggests that the old fashioned iron retort could probably be used, at any rate a retort adapted for the purpose might be obtained. Old cast iron retorts ought to stand a dull red heat for a long time and this is all the heat the gas peat would require.

 Treatment of the peat.

The peat is taken from the bog by shovels & carried to the tank by machinery. It is puddled at the tank and then spread out to dry. In drying it loses quickly within a few days to a well to say 80% of moisture. It contracts greatly and breaks into fissures. It is then cut by shovels into blocks of say 6 x 6 x 6 in. and is sold in this form. When so treated and dried it is scarcely affected by moisture. It does not become soft again on exposure to rain. It does however fall to pieces, especially if sun dried. When dried in the shade it is both more solid and more stable.

A carrier run by a electric motor delivers the peat from the bog to the puddler and from the puddler to the dump. Electricity furnished from the plant in town.

Use of the peat.

It is used locally for fuel. It sold for $4.50 at the pit. Retailed in town for $6

Treatment recommended by Payne for fuel.

Take from pit and puddle then spread to a depth of 16 to 18 in. It will quickly dry and break into blocks. Then turn over. After a few days it is dry and ready for market.

Machinery in use.

Puddling mill. The peat is delivered to a puddling mill which grinds it into a mud. It is carried from this grinder to the brick making machinery. Originally it was made here into bricks. Now the brick making part is removed and the mud is allowed to drop in gobs onto a conveyor board which carries it to the dump.

Total output made from this pit roughly estimated by Payne as 1000 tons.

Expenditure on plant about $15 000.

38

3 Machinery recommended by Pey
1st a dredge floating
2nd puddling machinery on dredge. 3rd contrivance for carrying the material to the bank and 4th machinery for scattering it.

Suggestions

It has been found that the time to puddle the fresh peat immediately after it is mined out the quicker the better. The fuel making machinery recommended drying to 70% moisture before puddling. This was tried but found not to work. The conclusion with regard to making fuel, is that it can't be done.

The peat must be puddled. If tried without puddling it is crumbly.

Amonia content

The last 10% of moisture driven off in gas retort contains so much amonia that it is scarcely possible to hold the nose over it.

39

Occurrence

The bog is apparently a small lake. It approaches a circular form, covers only a few acres and is bowl shaped. Its depth of middle reported about 27 ft. Pure white sand is found at the bottom.

A second small bog is owned by their company near by.

Analysis of sample

H.H. Wattenspoon Jr. Eng. Analyst.
an. made from briquette made by Schlicheysen process

water	9.1%
volatile matter	57.4%
Fixed carbon	23.1%
ash	9.2%
sulphur	1.2%

Heating power about 7850 B.T.U.

2nd Sample Small briquette.

Volatile and combined carbon	70.23
Fixed carbon	20.60
ash	5.66
sulphur	3.51

Sulphur in this peat reported to be much below the average in peat generally.

The amonia in it reported to be enough to make 150# sulphate of amonia from each ton.

Section 7 Canal 41
or dredge Oct 15 '08
about 5 km from beginning of
Canal. pat 8 canal.
1 to 2 ft muck
Sand to the water edge about 2 ft
Sand dredged to bottom of
canal about 15 ft deep.

Indexed to Ser June 18, 1915

Expense May 08

May 4. Proc. Amer. Assoc. V. 7 & 10 $1;

May 5. mileage book $20.00

" 6 Hash Table 45¢; S. 50¢. Sleeps at

" 7 B. 50¢; Sleeper Atlanta to Washington

" 8 B 1.00 Hash at Washington 50¢

May 14. Survey Slav supplies 50¢; Handbooks of

May 31

Express 3.15 Framing painting $2.00

May 31. Janitor service $2.00

Expense June 1908

June 10. Freight on box fossils from

June 22 Tel. C.K. ex. Gainesville 25¢

S. B. Ex 75¢ Dist to Ocala 150

" 23. Carriage hire at Ocala 50¢ B. 50

" 24. B. 50 L. 75; S. 50. L. 50.

" 25. B 50¢ L. Night Stg. 75; S Livi Club

Nov.

1 doz plates .90

Kans. City to Birmingham	7,35 mi
Biring to Atlanta	1,68 "
Atlanta to Cuthbert about	1.05 "
Cuthbert to Tallahassee	1.05 "
	1109
K.C. to Biring	735 "
Biring to Montgomery	96
Mont. to Bainbridge	174 "
Bainb to Tallahassee	41 "
	1046 "

Jacksonville to Richmond 639

Richmond to Washington 116.
Tall to Jax 166
321 mi

Fare 22.+ ; Milage
Macon to Atlanta Central R Ga. 103 mi

Rate from K.C. not changed.