

FIELD TRIP TO ATTAPULGITE FULLER'S EARTH LOCALITIES IN GEORGIA AND FLORIDA

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by

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with comments on soils and
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THE trip of approximately 115 miles was devoted principally to the Hawthorn formation, middle Miocene in age. Four sections in four active fuller's earth mines were observed, as well as the Curry Hills forming the northwestern border of the Gulf Trough of Georgia in which the commercial deposits of attapulgite occur.

The trip began at the northeast end of the mining district and proceeded southwestward along the regional strike. The commercial deposits in the Meigs and Ochlocknee mines (Stops 1 and 2, on accompanying map) are composed of attapulgite and diatoms, with subordinate amounts of sepiolite. From northeast to southwest, the deposits show an increase in carbonate content, and in the ratio of attapulgite to montmorillonite, and a decrease in diatom and sepiolite content. The altitude of the fuller's earth beds in the trough decreases southwestward at about 2 ft per mile; the southeast dip from the northwest margin of the trough is about 10 ft per mile.

Road Log: Moultrie, Georgia, to Quincy, Florida

Mileage

0.	Intersection of Hys. Ga. 37 and U.S. 319 in Moultrie. Go west on Ga. 37.
1.45	Jct. with Ga. 111. Turn southwest onto Ga. 111 after crossing Ochlocknee R.
20.45	Jct. of Ga. 111 with U.S. 19 just east of Meigs. Turn south onto U.S. 19.
22.95	Jct. Turn left onto secondary road at sign Midway Baptist Church.
23.10	Road fork at Midway Baptist Ch. Keep left.
25.15	Turn right at road jct.
25.4	Turn left onto mine road.
26.1	Road fork and entrance to mine.
	<i>Stop No. 1.</i>

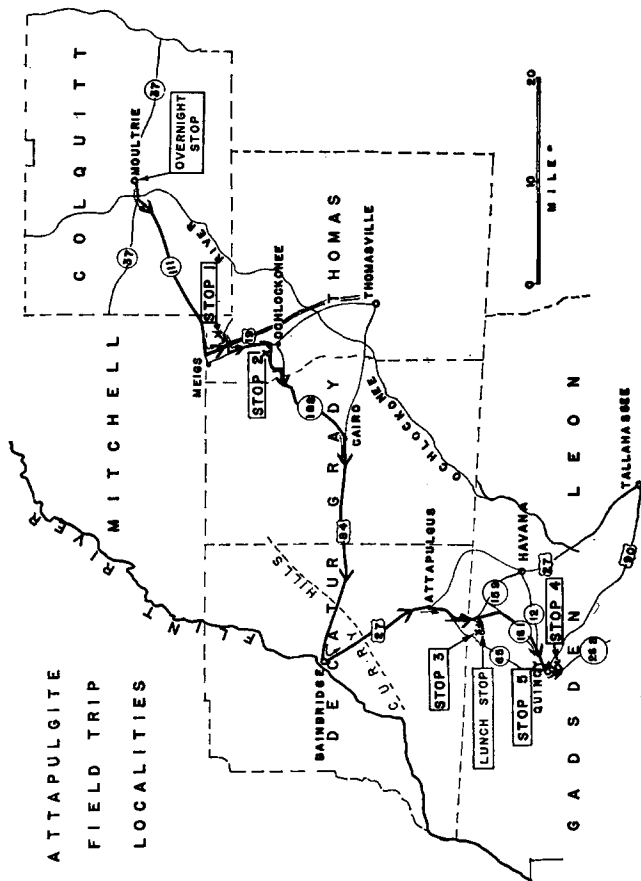
Meigs Mine
of Waverly Petroleum Products Co.
3 miles southeast of Meigs, Georgia
Geologic Section measured by L. Ray Gremillion, August 1963

<i>Bed</i>	<i>Description</i>	<i>Thickness in feet</i>
	25 ft of sand and clay overburden Elevation of top of Bed 4 is 235 ft (by altimeter)	
4	Clay: green; blocky to platy; slightly sandy. Attapul- gite, considerable montmorillonite.	15
3	Sand: fine to coarse; some grains as large as 1 mm. Loosely consolidated. Clay matrix. Numerous clay pebbles of various sizes and shapes. Most of the pebbles are rounded, some are angular. Some as large as 3.0 cm. The sand is interbedded with lenses of green clay. The pebbles contain numerous diatoms and sponge spicules and some volcanic shards. Clay content of pebbles is sepiolite, attapulgite and mont- morillonite, with the sepiolite content being higher than in the non-pebble clay.	5-6
2	Clay: green, blocky to platy; interbedded with very thin laminae of sand; attapulgite, some mont- morillonite.	15
1	Clay: blue; platy; interbedded with very thin laminae of sand. Gypsum crystals develop on surface upon drying. Within the clay are volcanic shards, diatoms, sponge spicules, silicoflagel- lates, and foraminifera. Unusually high sulfur (iron sulfide?) content. Attapulgite, some mont- morillonite.	10

Mileage

	Turn around, retrace route to U.S. 19. Cross U.S. 19, and continue westward 0.2 mile to old U.S. 19.
29.65	Jct. with old U.S. 19 at R.R. crossing; go south (left) on old U.S. 19.
30.05	Waverly Petroleum Products Co. plant on left (cotton field on right).
34.50	Jct. at Sing Filling Station at north edge of Ochlocknee; turn right onto county road to Cairo Production Mine.
35.75	Turn north (right) onto road to Cairo Production Mine.
36.5	Stop No. 2.

Ochlocknee Mine
of Cairo Production Company
1.5 miles northwest of Ochlocknee, Georgia
Geologic Section measured by L. Ray Gremillion, August 1963



<i>Bed</i>	<i>Description</i>	<i>Thickness in feet</i>
	30 ft of clay and sand overburden	
	Elevation of the top of bed 3 is 210 ft (by altimeter)	
3	Clay: gray-green; blocky to platy; little sandy; clay consists of varying amounts of attapulgite, montmorillonite and sepiolite. The percentage of attapulgite increases downward. Considerable kaolinite near the top.	18-20
2	Sand four lenses of sand, containing clay pebbles, and alternate with thin beds of green clay. Clay: position of pebbles and stratigraphic position is same as those in Bed 3 at Stop 1.	2-3
1	Clay: green to blue at base; blocky to platy. Similar to Bed 1 at Stop 1. A few phosphate nodules.	3-4

Mileage

	Turn around; return to jct. with county road.
37.20	Jct. with county road from Ochlocknee. Turn right (west).
39.15	Road jct. at Dollar's Grocery; turn left (south).
40.50	Cross roads; turn right (west) onto Ga. 188.
51.80	Jct. with U.S. 84 at traffic light in Cairo, Georgia; turn right onto U.S. 84 (west).
56.6	Attapulgite clay exposed in the ditch on the right.
69.75	Pause at top of Curry Hills; looking northwest one sees a lowland underlain by Recent alluvium from the Flint River and residuum from weathering of the underlying Suwannee limestone. The altitude at the top of Curry Hills is about 300 ft. Westward the surface drops to 150 ft at the base of the scarp. The Curry Hills trend northeast-southwest, and are situated in what appears to be a graben-like feature which has been called the "Gulf Trough of Georgia". In this trough the Miocene strata are much thicker than they are to the northwest, and it is here that the commercial deposits of attapulgite fuller's earth occur. "The name 'Gulf Trough of Georgia' is herein proposed for a major structural feature of the subsurface in southwest Georgia. This feature was recognized by P. L. and E. R. Applin....'as extending southwestward across Georgia through the Tallahassee area of Florida to the Gulf of Mexico'. This trough is a linear feature extending northeastward from Grady County through northwestern Thomas and Colquitt Counties. . . . The thickness of the Recent to Miocene deposits . . . suggests that the trough may also continue through Tift, Irwin, and northern Coffee Counties." (Herrick and Vorhis, 1963).

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Mileage

	Continue westward on U.S. 84.
75.15	Turn left onto 4-lane bypass E. of Bainbridge, Ga.; go 1.5 mile to U.S. 27; go S. on U.S. 27 toward Tallahassee, Fla.
79.8	Start up escarpment into Curry Hills and onto Tifton Upland.
88.15	Attapulgis, Georgia, from which the mineral attapulgitite is named. Turn right (south) on Ga. 241.
90.45	Railroad crossing; the Minerals and Chemicals Philipp Corp. plant is beside the R.R. to the right of the crossing.
92.80	Cross roads; turn left and go S.E. on Ga. 309, which becomes Fla. 159 in Gadsden County, Fla.
94.75	Road fork, opposite truck park. Take right fork toward La Camelia Mine.
95.30	Gate to the mine.
95.45	Fork; keep left.
96.50	Rd. jct. at top of hill; turn left.
97.45	Stop No. 3. In La Camelia Mine, 6 miles northeast of Quincy, Florida.

<i>Bed</i>	<i>Description</i>	<i>Thickness in feet</i>
	22 ft of sand, clay and carbonate overburden. (At the road level) Elevation of the top of Bed 5: 166 ft (by altimeter).	
5	Clay and shells: about 1 ft. Well indurated; possibly some silicification. Main clay is attapulgitite. Exposure below the road level:	1
4	Sand: tan; iron stained.	2
3	Clay: dark gray; shows good bedding; interbedded with sand at base. It appears to be a channel fill. It thins out on the edges. About equal amounts of montmorillonite and kaolinite.	6
2	Sand: gray.	4
1	Clay: gray to blue; platy; attapulgitite.	5
	Total	18

About 150 yards east, parts of beds 2, 3, and 4 are replaced by another fuller's earth bed which is 3-4 ft thick and gray-green in color. It consists mostly of attapulgitite, with some montmorillonite. This is the top minable fuller's earth bed. Where the two fuller's earth beds occur in the same locality they are usually separated by 6-8 ft of indurated very clayey sand.

Mileage

	Complete circuit through La Camelia Mine and return to Fla. 159.
100.05	Jct. with Fla. 159; turn right on Fla. 159, go about 50 yards to road junction and keep right on Fla. 161A toward Quincy.
102.20	Rd. jct.; turn right onto Fla. 161 to Quincy.
109.70	Jct. with Fla. 12; continue westerly on Fla. 12.
112.00	Jct. with Fla. 65 in Quincy; turn left and go south 2 blocks to U.S. 90.

Mileage

112.25	Jct. with U.S. 90; turn right and go west 1 block.
112.30	Turn south onto S-268
113.40	Entrance to Chesebrough Mine.
	<i>Stop No. 4.</i>

Chesebrough Mine
of The Floridin Company
One mile south of Quincy, Florida
Section measured by L. Ray Gremillion, August 1963.
Elevation of top of Bed 7: 161 ft (by altimeter).

<i>Bed</i>	<i>Description</i>	<i>Thickness in feet</i>
7	Sandy Clay: gray, stained with iron oxide; more sandy near the top; somewhat plastic; mainly montmorillonite, some kaolinite.	8.0
6	Sand: mottled orange, brown and gray; fine clayey.	3.0
5	Clayey Sand: light gray-green; fine to very fine; the top 2 ft is extremely fossiliferous, numerous pelecypod shells, ostracods, vertebrate bones. This bed is resistant light gray sandy limestone at the base and becomes more clayey upward. The main clay is attapulgite; considerable montmorillonite. The ratio of montmorillonite to attapulgite increases upward.	7-8
4	Clay: green, gray-green, dark gray and in places grayish-blue when wet. When dry the clay is light gray to very light bluish-gray. Somewhat blocky, platy. Mainly attapulgite, some montmorillonite. The clay is interbedded with lenses of dolomite, aggregating about 2 ft in thickness. The dolomite is very clayey, the main clay constituent being attapulgite. Amount of induration is variable. Locally, the clay is fossiliferous and phosphatic. Near the middle of the clay bed are very thin, discontinuous lenses of calcite crystals.	7-8
3	Clay: dark blue-gray; molds of gastropods; brown phosphate nodules; sandy; clay is attapulgite.	1.5
2	Dolomite: buff; fossiliferous; anastomosing with attapulgite. Phosphatic, micaceous, very little quartz.	3.5

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- 1 Clay: dark grayish-blue; platy; phosphatic; micaceous;
very little quartz; clay is mainly attapulgite,
very little montmorillonite.

Turn cars around and return to jct. of U.S. 90 and Fla. 12 and 65 at SE corner of Court House Square in Quincy. Go north on Fla. 65 approximately 1 mile to the Floridin Plant. *Stop No. 5.* Tour of plant of The Floridin Company; 45 min.

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