
THE NATURAL HISTORY SOCIETY OF MARYLAND
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Baltimore, Md.
1935-

Notes on the Eocene of Maryland

Department of Paleontology
The Natural History Society of
Maryland

The Eocene Deposits of Md.

Pamunkey Group
- Nanjemoy fm. → Woodstock, Potapaco
- Aquia fm. → Pagpotanoa, Piscataway

The eocene deposits of the state are typically glauconitic.

The best sections as listed in the Eocene vol. of the Maryland Geological Survey are:-

1. The Chester River in Kent & Queen Anne's Co.
2. Severn & South Rivers in Anne Arundel Co.
3. Potomac River, Piscataway & Mattawoman Creek, Upper Marlboro, & Fort Washington, in Prince George's Co.
4. In Charles Co. Clifton Beach, Port Tobacco River, and Popes Creek.
5. The most complete section of the middle Atlantic slope

of Eocene deposits are to be found in the high banks between Aquia Creek & Mathias Point. (Stafford & King George's Co. Va).

Origin of Materials.

1. Arenaceous & argillaceous materials are land derived and are undoubtedly of the Piedmont regions.
2. Calcareous elements are of organic origin are quite bleached by water forming in some cases limestone ledges.
3. Glauconitic elements are secondary formation are believed to have been due to a relationship between fermentation & decay of organisms & the foraminifera.

The Aquia fm named after the Aquia creek embraces faunal zones 1 to 9. (Zone 1 is however devoid of determinable fossiles. The Aquia fm. contains extensive faunal remainer.

Piscataway subst age Zones 1 to 7
Piscataway " " Zones 8 to 9.

Piscataway member.

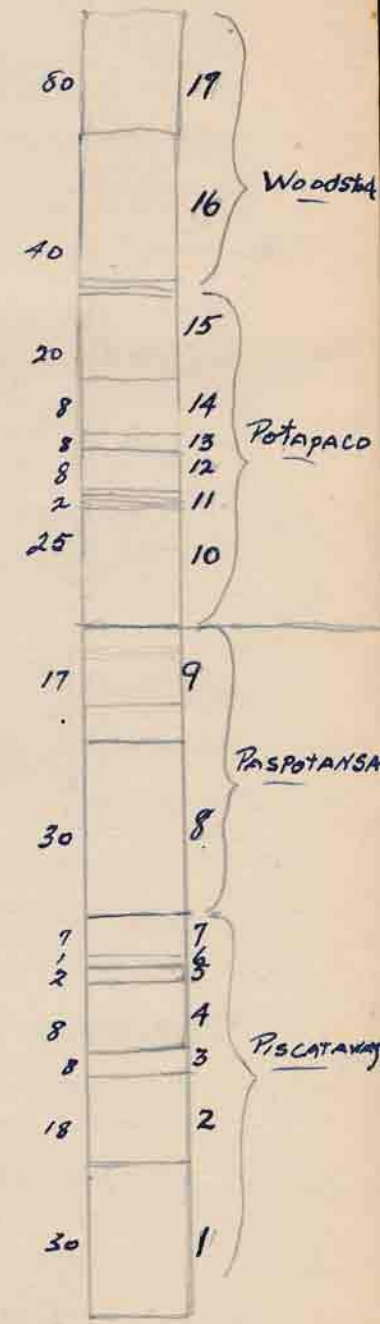
Zone 1 - Basal zone of the Aquia 8' at Glymont. Contains scattered animal and plant remains. Greensands, quite argillac. with basal pebble bed overlying the Cretaceous.

Zone 2 - Found at the base of Aquia Creek section and Glymont. 12' & 20' thick & disappear below H_2O line about middle of the Aquia Creek Bluff. Dark greensand packed with shells of.

- 273 ⊛ Crassatellites alaeformis
- 287 ⊛ Dosiniopsis lenticularis
- 278 Turritella mortoni
- 279 T. humerosa
- 294 Crassatel. aquinia
- 307 Cucullaea gigantea
- 296 Ostrea compressirostra

Zone 3 - A Limestone ledge - 2 to 3ft thick large number of casts with T. mortoni #278 & O. compressirostra #296 in larger numbers than in Zone 2.

Zone 4 - Typical green sands with forms as listed above - 7' & 9' thick.



Zone 5. – a very persistent lime-stone bed of about 2' thick (Aquia Creek Bluff) in addition to the above mention species it contains two highly typical species:

295 Pholadomya marylandica
282 Phenacomya petrosa.

as well as two or three gastropods Fusicla 275 sp., Cancellaria sp., 131 (cast only).

Zone 6. – Thin layer about 1' in thickness. near Marlboro Pt. Contains several species of coral

313 Eupsammia elaborata
313 Turbinolia acutecostata
313 Trochocyathus clarkeanus.

Zone 7 – Fossils few, characteristically greensand contains broken fragments of the preceding zones & may represent an unconformity between the Piscataway & Paspotansa members.

The Paspotansa Substage

This member is so called from Paspotansa Creek which enters the Potomac river on the Va. side 1 mile below Potomac Creek. Zones 8 and 9 are restricted to this stage

Zone 8 - Highly characteristically greensands & marls. about 30' thick. Several irregular bands packed with Turritella mortoni are present at both the Aquia Crk & Potomac Crk. sections also there are found - T. humerosa 279
Cucullaea gigantea 294
Crassatellites alaeformis 293
Ostrea compressirostra 295
The upper portions of this bed have afforded most of the species obtained from the Potomac Creek bluff.

Zone 9 - A Group of thick bedded limestone layers almost exclusively made up of T. mortoni forming a Turritella rock. Shore at Aquia Creek & Potomac Creek Bluffs are strewn with masses of these Turritella Rk. Bed is from 10' & 17' thick fauna similar to Zone 8.

The Nanjemoy Formation.

So called after the Nanjemoy Crk entering the Potomac Riv. in Charles Co just below Maryland Pt. The beds are highly argillaceous & contain abundant $CaSO_4$ crystals. [Zones 10 & 17.]

The Potapaco Substage

Named from the original name of Port Tobacco - (which is a corruption of Potapaco - Smith's original name)

ZONE 10 - Greenish gray sand which overlies the Fusitella Rk. Bed about 25' thick contains very few fossils. Casts of:-

Meretrix ovata
Calyptraphorus trinodiferus

ZONE 11 - A thin indurated layer of argillaceous greensand, 1 to 2 ft thick. Well developed at Potomac Creek bluff. contains Venericardia potapacoensis ( )

ZONE 12 - Greenish gray argillaceous sands. 8' to 9' thick no fossils

Zone 13 - Light grey glauconitic sand. Crowded with shells of :- ⊗ Venericardia potapacoensis
Fornatellaea fella
Cadulus abruptus
3ft thick.

ZONE 14 - Greyish grey argillaceous sand 4' to 6' thick no fossils - but very abundant with bands filled with $CaSO_4$ crystals.

ZONE 15 - Greenish-gray argillaceous sands 12 to 25' thick. This zone in Charles Co notably at Port Tobacco contains a fauna distinct from the Aquia or Woodstock faunas. The top of the bed is marked by a well developed layer of concretions.

Ty Woodstock substage. Named from an old Va. estate just above Mathias Point. Contains zones 16 & 17.

ZONE 16 — Deposits are green sand & greensand marls. 40' thick. Contains very few fossils.

ZONE 17. The highest beds at Woodstock & the Popes Creek strata are grouped together in this zone 20' thick

Protocardia lenis
Glycymeris idoneus
Aphetrix subimpressa
Carbula subengonata
Corbula onisicus
(etc.) all p. 67. G.S. of M.

Popes Creek sections

Section 3 miles above Popes Creek.

Gravel & sand ---------- 3'

Nanj. / Potapaco — argillaceous green sand (Z15) -- 6

Potapaco — Green sd with $CaSO_4$ xyls (Z14) - 5

14'

Section 2 1/4 mi above Popes Creek.

Neocene — Diatomaceous earth ---------- 10'

Eoc. Nanj. — Woodst. — green sd with fossil cast (Z17) --- 10

" " " argillaceous (Z16) ---- 30'

Potapaco — Greyish black green sd (Z15)

Venericardia potapacoensis & other fossils overlayed by concret ... 5

55

Section 1 mile below Popes Creek.

Neocene — Diatomaceous earth ---- 40'

Eocene Nanj. Woodstock

- Brown glauconitic clay ------ 2'
- Band of pink-brown clay Nod --- 6"
- Dark glauconitic clay f. casts ... 4'
- Concretions with occasional fossils ---------- 6"
- argillaceous grsds with many casts & occasional shells — 3'
- Concretions with many large Turrecoglossa tuberculifera 6"

argillaceous grsds with many fossils (Z17) ---- 6'

Venericardia potapacoensis.
Meretrix subimpressa
T. potomacensis
Mesalia obruta
Protocardia lenis
Corbula subengonata.

56'6'

Section at Glymont, N. of Wharf & Ravine.

Pleistocene	Gravel + Loam ----------	20'
Aquia / Piscataway	Light green glauconitic sds underlain by argillaceous sand with few fossils (Z 4) ----	10'
	Indurated greensds (Z 3) ----	1'
	Greenish marl with numerous fossils (Z 2) ----------	21'
	Argillaceous glauconitic sds without many fossils but with indeterminate plant remains (Z 1) ----------	8'
Cretaceous -	Variegated clays of the Pot. g.	20'
		80'

Potomac area Va. side going up the river from Marlboro Pt.

Section of Center Bluff at Woodstock

Pleistocene - Yellow & Orange Sands — 25'

Miocene Diatomaceous Earth with Miocene fossils — 5'

Miocene / Eocene:

- Woodstock: Argil. greensds (Z 17) — 6'
- Woodstock: Dark greensds with a large no. of fossil (Z 16) — 20'
- Potapaco: Greensds with Tornatellaea bella, Cylichna venusta, Ringicula dalli, Venner. pot. (Z 15) — 6'

62'

Section three Miles below Potomac Creek.

Pleistocene - Sand & Gravel — 2'

Greenish gray argill sds (Z 15) — 4'

Greenish gray " " " with $CaSO_4$ — (Z 14) — 5'

Light gray greensands with Sands Containing V. Potapacoensis (Z 13) — 4'

Greenish-gray argil. sds (Z 12) — 10'

Indurated sds with V. potapacoensis (Z 11) — 1'

26'

Va
outside of
the Potomac
River
district

Section of center of Bluff at Potomac Creek.

Pleistocene - yellow, red + brown sds ---- 15'

Neocene. - White gritty clay Miocene fossils at base ---- 5'

Navy Potapaco

- Greenish - gray argil. sds slightly glauconitic (Z.15) ---- 38'
- Argil sds with bands of Ca SO_4 + yls (Z. 14) ---- 4'
- Light - gray glauconitic sds with V. fricardia pot. (Z13) - 3'
- Greenish Gray argil sds (Z.12) - 8'
- Indurated Greensds V. potap. (Z11) - 1'
- Greenish gray argil sds, glauconitic, casts of Meretrix (Z10) 25'
- Thick - bedded arenaceous + glauconitic ls. with layers of weathered greensds Indurated strata composed T. mortoni (Z9) - 12'
- Greensds beds much weathered and filled chiefly with T. mortoni in thick layers. T. humerosa, Cucullaea gigantea, Crassatellites alaeformis, Ostrea compressirostra etc (Zone 8). ---- 35

136'

Section of Western Portion of Aguia Ck.

Pleistocene - Fine sand yellow in color white at base ——— 26'

Aguia — Paspotansa
- Light green sands (Z 10) ..... 10'
- Arenaceous + glauconitic so largely filled with T. M (Z 9) — 10'
- Fine sand gray or green with abundant fossils (Z 8) ..... 30'

Aguia — Piscataway
- Dark colored greensands filled with broken shells (Z 7) — 7
- Zone 6 same with complete shells — 1
- Indurated layer of light colored greensands filled with T. mortoni, T. humerosa + no. of other shells (Z 5) — 2
- Greensand marls same as (Z 4) 8
- Indurated layer of dark colored greensands with
- Crassatellites alaeformis (Z 3) etc — 2
- Greensand marl with fossils Z 2 — 16

112

Section 2 miles up Aguia Creek

Pleistocene - Gravel + sand ..... 7'

Aguia — Piscataway
- Indurated greensands (Z 3) ..... 1'
- Greensds with fossils (Z 2) — 15'
- argillaceous sand more or less glauconitic without fossils (Z 1) ..... 18'

41'

Riverside, Md. August 18th
Charles Co.

Sunday - Bob Wheeler, E.H Palmer
E.M Palmer arrived 5:10 P.M.
B.D. Calder + Wm E Lehr arrived
7:10 P.M.

Headquarters; Mrs Dutton's
farm. Right side of road on
way down. Nice supper, ham,
potato salad, tomatoes, Bread butter
tea, cake, jello, . Strong N.E. wind
squally.

Explained our work for
the Trip and went into detail
for our trip tomorrow (aug 19)

Monday - August 19th

Arose at 7a.m. Breakfast at
8 am. sausage, cereal, Coffee, Bread
Butter, pancakes, + syrup. Took
lunch + left for Popes Creek.
Took short cut from Port Tobacco
Heavy clouds strong N.E. wind
with occassional sunshine +
showers. Earl stayed with Ben
about 1/2 mile below Creek. Earl
collected plants, Ben fossils.
Bob, Bill, + I went about 1 mile
below Creek all exposures were
apparently covered with slides
and plant growth. Found a number

of shark's teeth on the beach as well as a few Bone fragments. Obtained some fairly pure diatomaceous earth from the Miocene deposits which laid on top of the Eocene beds and which in turn was overlaid with Pliistocene gravel containing considerable gravel of fair size. It started to rain heavy and steady. All of us were wet to the skin. When it finally let up & we were able to return to the car we had lunch - 2 ham sandwiches apiece, one tomatoe ice tea & cake. Drove to La Plata made some purchases & returned to Camp. Ate dinner, had - fish potatoes, veg. salad, iced tea, hot biscuits & butter, bread puddin with sauce for dessert. Bob painted the top of my car as it had leaked over at Popes Creek. Bill & Ben packed fosils, Earl mounted plants and I spoke to the Hutton family. Wrote a few letters and sat up & talked until about 11:30 P.M. Bill got the big idea of placing a tobacco (?) under our bed to remove the sway-back out of the

spring. Aug 20-1935

I awoke at 3:30 am. apparently due to the heavy rain + wind! saw the liner go by on its way to Washington. Ben, Bill, + Earl were snoring like horses. Awake at 4:30 am. by a terrific downpour which beat in our windows into Earls face — everybody up except Bill who slept sound.

Arose dressed washed + were ready finally at 9:30 am. for breakfast. — Cereal, Coffee, ~~biscuits~~, milked chipped beef, syrup. Rained all day strong N.E. wind just laid around Camp. Ate lunch - salad ham, coffee, bread + butter, peaches cake. Bill left for Baltimore, Earl mounted plants, Ben + I studied Eocene vol + localities. played checkers, + cards. Ate a fine dinner, stewed tomatoes potatoes, beef, gravy, coffee, butter + bread with big plate of cup custard for dessert. Bill left just before dinner to go to Baltimore. We four played 500 + checkers until quite late.

Aug-21-1935

Arose about 8 a.m. Last night it rained hard & heavy all night & here it is still raining.

Ate a nice breakfast of cereal, Coffee, hot biscuits, bacon eggs, pancakes & syrup. The storm began to break up about 11:30 a.m. so we made preparations to visit Liverpool Pt. in the afternoon. Ate lunch here at the house before we left- tomatoes fried potatoes, Beef, bread, butter cake iced tea & coffee. Liverpool Pt is but 10 miles from here. Series of cliffs start about 1/8th of a mile below the resort. Bob, Ben, & I worked these cliffs very hurriedly to about 3/4 mile below the resort. [Earl stayed in Camp to Botanize.] We found a number of teeth in the gravels on the beach Ben found three reptilian teeth & I found two- one in the cliff I found also a costal plate of a turtle & two fine specimens of mylobates pavement. One of the best finds was a very large

vertebrae - (reptilian) found on the beach at the base of a slide in the cliff and it was obviously broken out of the cliff at the time of the slide.

Arrived back at camp at 6:10 P.m. had some dinner: Tea or coffee, bread, butter, cold slaw, potatoes, fried chicken & thick brown chicken gravy, with a real big piece of lemon merange(sp) pie for desert.

Played cards this evening for a little while. Examined our fossils & made plans to go out to Liverpool pt tomorrow. Bill didn't arrive this evening.

Aug 23 - 1935

Arose about 7 a.m. nice day.

for Breakfast: - Hot rolls, butter, coffee, cereal, malted chipped Beef. Ben, Bob, Earl & I walked south on beach from camp. We walked about 2 miles down.

John arrived about 11 am & came & met us on the beach The fossils in the cliffs were primarily casts.

For lunch we had a variety of cold cut meats, fried potatoes, tomatoes, bread, butter,

pear sauce, & pineapple for dessert. iced tea & coffee.

In the afternoon we returned to the beach at Liverpool pt. & collected a number of teeth & Turtle remains as well as mylobates plates.

John & I walked South on Beach to Wades Beach. Here we were able to get a lift back to the road & to Liverpool pt. Bob failed to follow instructions & walked about 4 miles trying to get John & I.

For supper: Hot rolls, coffee Ham stewed tomatoes, corn, jello & whipped cream.

Played cards & checkers and packed fossils. Went fishin' & caught two eels.

Aug 23.

Arose 7:00 am. breakfast at 8:15 am. had swim in river before breakfast. for breakfast: cereal milk, coffee, hot biscuits, eels, & egg omlets.

Left camp & went up to Clifton beach we walk north of Beach & the edge of Wades Bay found quite a few fossils & took a few pictures. mylobates plates were numberous, teeth fairly few. found large block of yellow sandy clay with many Turitella casts.

ate lunch Cheese sandwiches pear butter Cake, + iced tea returned "home" about 5:30 p.m. took a swim + for dinner we had deviled crabs, potatoe salad tomatoes, beer, and for desert lemon meange pie. Went to bed early

Aug 24-1935

arose about 8 am. sibin in the river. Breakfast:- Coffee, hot rolls, cereal, hot cakes syrup + sausage. left Camp + went to Plymouth where we found zones 1 + 2 of the Aquia fm. found a few teeth. and one or two shells. Visited Indian Head and on the way home made arrangements for a boat on Monday (Aug 26) to take the other side of the river.

Lunch today was: Sugar cake deviled crab, two sandwiches + iced tea.

Found Phelps + Hechlinger in camp when we arrived they are going to stay with us until Monday night.

Supper tonite we had fried soft crabs, stew (beef) tomatoes, homemade bread, Beer, iced tea + pudding.

Aug. 25th.

Arose about 7 a.m. It was very cool too. Malcolm & Rog. didn't sleep very much last night it was probably cool for them.

Earl & I shaved & after breakfast went to church at Chapel Point. Rog. went along with us & the other boys came over later.

Had a fine breakfast as usual. — Hot rolls, cereal, coffee Bacon & eggs & pear butter. Church was full of "Wee sorts." saw Father Dholman & then went on to Pope's Creek. The hook on the clutch pedal of my car broke. but we got another & fixed it. The boys worked S of the Wharf about a mile & a ½ abundant very few-workable fossils most of them being only casts.

After lunch we worked the cliffs south of the beach & found some fair material. John & the boys (Mal. & Rog) went to Liverpool Pt. & we came home.

John invited a Mr. Stevens Pastor of old Durham church to

dinner with us. Roy + Mal. left + about 7:30 for Baltimore.

Ben + I packed fossils until 11:00 PM.

Lunch today was two nice ham sandwiches apiece, ginger cake + iced tea.

Dinner: Cold slaw, potatoes, bread, iced tea or coffee, fried Chicken, gravy, + lemon pie for desert. Ate fed about 12:30

Earl + Bob have been sleepin' like horses for the last few hours.

Aug 26th

Arose at 6 a.m. ate breakfast at about 6:45 a.m. and left Camp 7:15 am + go to Liverpool Pt. Here we met Mr Monroe + Pete Speer who ran the launch for us. Our party included - J.B.C, B.A.C., Ethel P., B.W., and W. Dutton. We ran across the river to Aquia Creek where we found the largest and one of the best fossil bed deposits of the Eocene yet observed. A number of fossils were excavated from the beds just above the indurated ledge containing innumerable casts of Turritella + occassional casts of Panopea elongata. A number of

fairly good gastropods & bivalves were also collect just beneath the ledge. Few sharks teeth were found in the beach but a number were dug out from the cliffs.

John and I walked south toward Potomac Creek and about 3/5 of a mile south of Aquia Creek I found the (11:20 am) remains of crocodile protruding about 1" from the face of the cliff approximately 2'6" beneath the indurated ledge. The fossil materials were about 12 feet from the beach & necessitated the construction of scaffold in order to work out the remains. There were three exposures of the remains. the first appeared to be the portion of rib or mandible & ran directly back into the cliff as did the other two sets of remains the center piece seemed to be a fragment of jaw bone with a large tooth set directly in the socket, the enamal being still intact. The third portion appeared to be a piece of mandible or nasal processes. Three large blocks

of marl were excavated containing the bone material and the remains continued to run directly in to the cliff. These we decided to leave until tomorrow.

We got aboard again and proceeded South to the South bank of the Potomac Creek, here the cliffs were nearly as high as those of the Aquia area, Turritella and Ostrea compressirostra of unusually large size. Collected a large slab of Turritella Rock 21" x 14" (found by Palmer)

Returned to Liverpool pt at 5 35 p.m. Ate dinner & retired comparatively early.

Aug. 27-1935

Arose about 6 20 a.m. ate breakfast about 7 15 a.m. Arrived at Liverpool pt about 8 10 a.m. boarded the launch and left for Aquia Creek. Where John, Earl & Ben continued the excavation of the crocodile remains. Bob, Natty, & I walked down the cliffs to Potomac Creek.

Bob found some bone remains similiar to rib

processes. These remains were about 3½ ft below the indurated ledge and about 8' above the beach level. It is of extreme interest to note the dip of the beds between Aquia Creek and Potomac Creek, a distance of 1 mile.

A squall, which arose about 2 15 p.m. made the H2O so rough that it necessitated our leaving. Most of the bone remains had been removed and only small portions remained in the cliffs which impossible to dig out because of the position which they extended into the cliff.

Returned to camp about 4 30 p.m. & rested a bit before dinner.

After dinner we worked until 9 15 p.m. packing the fossils in burlap & plaster so that John could take them to Baltimore. Took a flashlight photograph of our room.

Wrote up a series of notes for the P. which John was to visit and leave with them also a roll of film showing pictures of the excavation.

The following is a list of the notes I sent & the Press list will be of interest & compare these notes with the article which they might publish.

(1)- Members of the Natural History Society of Maryland Excavate Ancient Crocodile Remains.

(2)- The Charles County Paleontological Expedition sent out by the Natural History Society of Md. have found a large amount of prehistoric Crocodile in the Eocene deposits of the Potomac river. The unusually large teeth and bone remains give evidence of an animal of great size.

(3)- The remains of this 40,000,000 year old crocodile were found embedded in the Cliffs of the Potomac River near Aquia Ck. The fossil remains were discovered about 12' above the beach and necessitated the construction of a scaffold to dig out the bones and teeth.

④ The brittle remains of this 40,000,000 year old crocodile were removed with the greatest of care and transported to the field station where they were packed in burlap & plaster and shipped to the laboratories of the Natural History Society of Maryland.

⑤ The members of the party include Elsa M. Palmer, J. B. Calder, B. A. Calder, E. F. Palmer, Robert Wheeler & W. E. Lehr.

⑥ The field station of the Expedition is located at Riverside Md.

⑦ In addition to the ancient reptilian jaws and teeth the members of the Expedition have collected a large number of prehistoric animals including mollusks, the centrums & teeth of sharks and a number of crushing pavement teeth of the great Eagle Ray.

Wed - August 28th

Arose early ate breakfast at about 8:30 a.m. John packed his car, taking all the smaller blocks of the crocodile remains. Left Riverside about 10:30 a.m.

The rest of us straightened up Camp. Mrs. Egerton, Harding jr, Wagner and Reed arrived about 11½ a.m. The party with Earl took a long walk up the beach from Rubersid + returned about 1 p.m. We ate lunch under the trees on the front lawn.

After lunch the boys left for the headwaters of Nanjemoy Creek. Ben + I rested all afternoon + Bob. read.

Egerton + the boys stayed down for dinner and left for Baltimore about 7½ P.M. I sent a card can full of fossils + town with them.

Aug 29th 1935.

Arose early had breakfast and left for Liverpool pt where we arrived at 8½ a.m. + met Monroe + Speet. We went back to Aquia Creek Bluff and excavated the Crocodile or turtle remains which Bob had found on the previous Tuesday. Two large blocks were removed. The bone material was about 8' above the beach and a

scaffold was built & facilitate the digging.

After lunch we stopped at the center bluff at Potomac Creek where I found some large oyster shells and a number of teeth. The best find made was a large heavy arca-like shell.

We went down the river to the banks opposite Maryland Light. Here the deposits were not very fossiliferous but the two or three bands of fossils were filled with Cardium (?) like shells.

We worked back to the base of the Potomac Creek Bluff where I found a large number of fine oyster shells, arcas (?) teeth, Cupa corals and many fine Turritella.

Returned to Liverpool Pt about 7 1/2 P.M. ate dinner at 8 P.M. & retired early.

Friday. Aug. 30th 1935

Arose about 8:30 A.M. ate breakfast. and the day was bad - very overcast & occasional showers.

Bob & I packed the bones we got yesterday in plaster & Burlap. I spent the latter part of the day

wrapping fossils & packing them Ben & I went out on the River & Crabbed and fished. I caught about 4 doz. crabs & Ben caught no fish at all. Played cards in the evening and fished & crabbed off the pier at Harrison's store.

Sat. Aug 31st

Left camp early & went to Durham Church where we took a number of pictures both of the Church & roadway. From here we went to Ironsides where we again took picture from here we went to Rose Hill where we spent a few hours of pleasant conversation with Mrs Gravenberg. From here we went to La Plata & then to Morgantown & Rocky Point.

Stopped at Chapel Point on the way home and saw Fr. Pohlman took a number of pictures today of historical, religious, & educational nature. These will be of extreme interest for a Popular Lecture.

Sept 1st 1936

Arose early packed most of our equipment & left for Chapel & Church. Arrived to late for services so we visited Warehouse Landing near Port Tobacco. From here we went to Rose Hill & with Capt. Gravenberg we went to some Eocene Exposures on Hog Hole Run. These fossils which we collected are not labeled.

Returned to Riverside about 10 A.M. ate dinner packed the car & left for Baltimore at 3:45 P.M. Left a great deal of material & equipment at Riverside.

Six Baltimore Scientists Will Delve Into Eocene Era

Members Of Natural History Society Of Maryland Will Seek 40,000,000-Year-Old Fossils In Southern Maryland

[*By the Associated Press*]

Riverside, Md., Aug. 17—Six scientists will arrive here tomorrow to begin delving 40,000,000 years back into the history of Maryland.

In the strata of this section they will seek fossils of the plant and animal life of the Eocene era.

The party includes Elra Palmer, William E. Lahr, John B. Calder, Earl H. Palmer, Robert Wheeler and B. A. Calder.

Baltimore Science Teachers

All are members of the National History Society of Maryland and all are science teachers in Baltimore schools.

The party plans to study the geology of this section of Charles county and the Virginia side of the Potomac river, a type area for the Atlantic Coast.

The fossils collected will be mounted and used in the teaching of geology. Slides for illustrated lectures will be made from pictures of their finds.

Any finds of moment will be duly recorded with the Smithsonian Institution and other scientific organizations.

Elra Palmer said 80 per cent. of the forms of animal life in the era under study are now extinct. The other 20 per cent. exist in some form.

When the Eocene Era dawned 40,000,000 years ago and the earth was in its infancy, there was no Chesapeake Bay, no Eastern Shore—all Maryland was yet to emerge from a vast and teeming sea.

Geological records—the type of deposits laid down and the fossils embedded therein—indicate that when the waters receded this section was a lush, swampy, marsh land, with tropical flora and fauna.

Expect To Find Sea Life

Palmer said the party expected to find the fossils of prehistoric crocodiles, porpoises, sharks, whales, turtles and even of "sea serpents" or huge water snakes. Some of these ancient sharks reached eighty feet in length.

When the fragile and fragmentary remains are reconstructed and mounted, they will be used to illustrate

(Continued on Page 16, Column 4)

BALTIMORE, SUNDAY MORNING, AUGUST 18, 1935

SIX MEN OF SCIENCE WILL HUNT FOSSILS

Baltimore Teachers To Delve Into Eocene Era

WILL START TODAY

Charles County And Virginia Side Of Potomac River The Scene

(*Continued from Page 20*)

clearly what forms of life existed in that dim era.

Fossils are seldom found intact. It is the rarest of finds when the remains of the whole animal are found embedded in the sands, clay, mud or shale.

Must Be Removed With Care

The reconstruction process is a painstaking one. The brittle fossils must be removed from the scene of their discovery with the greatest of care and often supported by plaster until the dirt can be scraped from them.

Often only the impression, and not the remains of the animal itself, is found. In this case the impression is taken and the animal reconstructed from that.

Thorough knowledge of the anatomy of a certain animal makes it possible to reconstruct the entire creature from a few parts and to obtain an estimate of its size.

The group plans to remain in this section for two or three weeks, seeking fossils in the high cliffs along the Potomac or in other promising strata. The hunt is not haphazard. The scientists know what fossils to expect in a given deposit.

Much work will be done around Nanjemoy creek, empyting near here. It is typical of the Eocene Era.

The scientists will be working around the sits of Indian villages and the scene of the beginning of modern Maryland history, but 300 years is short compared with 40,000,000.

The Natural History Society of Maryland is taking up the geological survey of the State where it was left off in 1900. A study of the Niocene Era has just been completed, with the result the skull of a huge whale, possibly a new specimen, was discovered in Calvert county.

Discovery of new specimens for the society is the ultimate aim of the group.

THE TIMES-CRESCENT
LA PLATA, MARYLAND
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JAMES CRAIK MITCHELL . . Editor and Publisher
FRIDAY MORNING. AUGUST 23 - - 193

Six Baltimore Scientists Will Delve Into Eocene Era

Riverside, Md., Aug. 17—Six scientists will arrive here tomorrow to begin delving 40,000,000 years back into the history of Maryland.

In the strata of this section they will seek fossils of plant and animal life of the Eocene era.

The party includes Elra Palmer, William E. Lahr, John B. Calder, Earl H. Palmer, Robert Wheeler and B. A. Calder.

Baltimore Science Teachers

All are members of the National History Society of Maryland and all are science teachers in Baltimore schools.

The party plans to study the geology of this section of Charles County and the Virginia side of the Potomac river, a type area for the Atlantic coast.

The fossils collected will be mounted and used in the teaching of geology. Slides for illustrated lectures will be made from pictures of their finds.

Any finds of moment will be only recorded with the Smithsonian Institution and other scientific organizations.

Elra Palmer said 80 per cent. of the forms of animal life in the era under study are now extinct. The other 20 per cent. exist in some form.

When the Eocene Era dawned 40,000,000 years ago and the earth was in its infancy, there was no Chesapeake Bay, no Eastern Shore—all Maryland was yet to emerge from at vast and teeming sea.

Geological records—the type of deposits laid down and the fossils embedded therein—indicates that when the waters receded, this section was a lush, swampy, marsh land, with tropical flora and fauna.

Expect To Find Sea Life

Palmer said the party expected to find the fossils of prehistoric crocodiles, porpoises, sharks, whales, turtles and even of "sea serpents" or huge water snakes. Some of these ancient sharks reached eighty feet in length.

When the fragile and fragmentary remains are reconstructed and mounted, they will be used to illustrate clearly what forms of life existed in that dim era.

Fossils are seldom found intact. It is the rarest of finds when the remains of the whole animal are found embedded in the sands, clay, mud or shale.

Must Be Removed With Care

The reconstruction process is a painstaking one. The brittle fossils must be removed from the scene of their discovery with the greatest of care and often supported by plaster until the dirt can be scraped from them.

Often only the impression and not the remains of the animal itself, is found. In this case the impression is taken and the animal reconstructed from that.

Thorough knowledge of the anatomy of a certain animal makes it possible to reconstruct the entire creature from a few parts and to obtain an estimate of its size.

To Remain Several Weeks

The grounp plans to remain in this section for two or three weeks, seeking fossils in the high cliffs along the Potomac or in other promising strata. The hunt is not haphazard. The scientists known what fossils to expect in a given deposit.

Much work will be done around Nanjemoy creek, emptying near here. It is typical of the Eocene Era.

The scientists will be working around the site in Indian villages and the scene of the beginning of modern Maryland History, but 300 years is short compared with 40,000,000.

Last Survey In 1900

The Natural History Society of Maryland is taking up the geological survey ofthe State where it was left off in 1900. A study of the Miocene Era has just been completed, with the result the skull of a huge whale, possibly a new specimen, was discovered in Calvert County.

Discovery of new specimens for the society is the ultimate aim of the group.—Baltimore Sun.

Finds Maryland Crocodile 40,000,000 Years Old

Baltimore Group Uncovers Thirty-Inch Snout At Riverside, Supporting Theory State Was Once In Tropics

[*By the Associated Press*]

Riverside, Md., Aug. 29—A giant crocodile bogged down near here some 40,000,000 years ago—according to its own record left in the Potomac river cliffs.

Along about the same time oysters nine inches across, huge sharks and great eagle rays—commonly known as "skates"—not to mention other species of marine life, desported themselves in the region.

In Tropics Then

The climate of what is now Maryland was tropical then, the remains of prehistoric life found sealed in rock indicate.

The crocodile, the oysters, the giant skates, all came to the light in the cliffs of the Potomac river near Aquia Creek through excavations of the Charles County Paleontological Expedition sent out by the Natural History Society of Maryland.

The digging has been going on since August 18 and will continue through this week. Members of the expedition, science teachers in Baltimore schools, are Elra M. Palmer, John B. Calder, B. A. Calder, Earl H. Palmer, Robert Wheeler and William E. Lehr.

They found only the snout of the prehistoric crocodile. It is 30 inches long. Imbedded in it are many teeth, two to three inches in length.

Shipped Here

The snout was found about twelve feet above the beach. Evacuation work was halted while the scientists built a scaffold around it, packed it in burlap and plaster and shipped it to the laboratories in Baltimore, where it will be prepared for exhibition in the society's museum.

Several shells of the nine-inch oysters also came to light. A number of shark teetr, some large, some small,

[Continued On Page 20, Column 7]

40,000,000-YEAR-OLD CROCODILE IN STATE

Baltimore Group Digs Up Snout To Prove Maryland Once Was Tropical

[Continued From Page 38]

also were found, as were parts of the backbones of what must have been large sharks.

Rays' "Plates" Found

The scientists also found a number of teeth of the eagle ray. They are "plates" rather than individual pieces.

The expedition sought forms of life of the Eocene period, approximately 40,000,000 years ago. Eocene is a Greek word meaning "dawn of recent times."

Most of the society's work in the past has been done in the Miocene period, which was only 20,000,000 to 30,000,000 years ago. It has a valuable collection of exhibits from that period.

All Maryland was still at the bottom of a vast sea when the Eocene era dawned. Geological records of the type of deposits laid down and the fossils embedded in them indicate that when the waters receded this section was a swampy marsh land, with tropical flora and fauna.

Washington Post - Frid. Aug. 30 1935

Maryland in Tropics 40 Million Years Ago

Associated Press Photo.

Two members of the expedition of the Natural History Society of Maryland, Elmer M. Palmer, left, and John B. Calder, are shown inspecting the cliffs over the Potomac River south of Washington for further traces of prehistoric animal remains.

Last edition of The Washington Post Friday Aug 30 1935

Maryland Part of Tropics—Only 40 Million Years Ago

Natural History Society Uncovers Remains of Huge Crocodile in Cliffs of the Potomac; Other Significant Finds Are Made.

By the Associated Press.

Riverside, Md., Aug. 29.—Geological records indicating that Maryland's climate was tropical in nature during the eocene period—some 40,000,000 years ago—have been uncovered near here by an expedition of the Natural History Society of Maryland.

Chief among the finds of the scientists, all Baltimore teachers, was the snout of a giant crocodile. That find alone, they feel, is definite evidence that Maryland once had a tropical climate.

The snout is approximately 30 inches long, giving evidence as to the size of the giant animal. Imbedded in it are a number of cone-shaped teeth two or three inches long.

The finds were made in the cliffs of the Potomac River near Aquia Creek. The crocodile remains were located 12 feet above the beach and the scientists had to turn carpenters and erect a scaffold to complete their excavations.

Other finds of a valuable scientific nature during the excavations, which began August 18 and will continue through this week, include several oyster shells nine inches long and round in shape, a number of shark teeth, parts of the backbone of lare sharks and a number of crushing, pavement teeth of the giant eagle ray. The ray is commonly known as a "skate."

Most of the society's work in the past has been done in the miocene period, which was approximately 20,000,000 to 30,000,000 years ago. The present expedition had as its purpose the discovery of remains of forms of life of the eocene period.

The specimens found on this trip have been shipped to Baltimore and will be placed on exhibition in the society's hall there. The society already has a valuable collection of relics of the miocene period.

Members of the party included Elra M. Palmer, John B. Calder, B. A. Calder, Earl H. Palmer, Robert Wheeler and William E. Lehr.

Baltimore Evening Sun. Frid. 30 3/35

Christopher Billopp's Column.

The Rolling Road

"I MISSED the market by ten per cent.," explains Clyde N. Friz, architect in charge of remodeling the Executive Mansion. From which we deduce the fact that the proverbial mile is equal to about $22,000.

—o—

Well, at any rate, Maryland taxpayers contemplating the announcement in England of another royal engagement, may console themselves with the thought that they are not confronted with the prospect of the marriage of a third son.

—o—

Prehistoric oysters, nine inches across, have been found in the Potomac river cliffs at Riverside, Md. We have no doubt that in those early days there were also prehistoric Maryland connoisseurs who insisted upon swallowing them whole.

—o—

Baltimore News. Editorial Column
Sept 1st 1935

Return of The Oyster

THE tonging season for oysters opens today in some of the Eastern Shore county waters.

More oystermen are reported to be preparing to engage in the industry this year than in the last two years, and oysters in the tonging areas are said to be fatter.

Despite the decrease of Chesapeake bivalves in recent years, due to overdredging and other causes, the industry in its various branches STILL GIVES EMPLOYMENT TO TEN THOUSAND PERSONS DURING THE SEASON.

Intelligent management and effective efforts to extend the market for Chesapeake oysters would increase this number.

Prehistoric Maryland oyster shells have been found in cliffs along the Potomac which measure nine inches across the shell.

Nature, however, anticipated the coming of a race of Marylanders whose dietary code of ethics would hold that TO CUT AN OYSTER IN HALF AT TABLE WOULD BE A SIN, IF NOT A CRIME.

She, therefore, began the task of reducing the maximum size of Chesapeake oysters to what would be a reasonable mouthful.

But it took her countless centuries to complete the job.

Reckless dredgers have beaten, or are beating, Nature to a frazzle.

In the course of one century, they have reduced the average size of our native bivalves so greatly that a mouth of moderate size might easily accommodate several.

But WASN'T NATURE THE WISER?

Richmond News Leader
R14 11-8

Forms of Life Found in Md. From 40 Million Years Ago

RIVERSIDE, Md., Aug. 29.—(AP)—A giant crocodile bogged down near here some 40,000,000 years ago—according to its own record left in the Potomac river cliffs.

Along about the same time, oysters nine inches across, huge sharks and great eagle rays—commonly known now as "skates"—not to mention other species of marine life, desported themselves in the region.

The climate of what is now Maryland was tropical then, the remains of prehistoric life found sealed in rock indicate.

The crocodile, the oysters, the giant skates, all came to the light of 1935 Maryland in the cliffs of the Potomac river near Aquia creek through excavations of the Charles county paleontological expedition sent out by the Natural History Society of Maryland.

But, to begin with the crocodile: The scientists, natives of Baltimore, found only the snout of the prehistoric animal—but what a snout it turned out to be. Including the roots of the jaw, it is thirty inches long, which is visible evidence that the animal was a veritable giant.

Imbedded in the snout are many teeth, cone-shaped things two to three inches in length—further evidence of the size of the crocodile.

The snout was found about twelve feet above the beach, and the excavation work halted while the scientists turned carpenters and built a scaffold up to it. The remains of the animal were removed with care, packed in burlap and plaster and shipped to the laboratories of the Society of Baltimore.

There it will be studied and prepared for exhibition in the society's museum.

Oyster Shells Found.

Several shells of oysters, round in shape and approximately nine inches in length, also came to light. A number of shark teeth, some large, some small, also were found, as were parts of the backbone of what must have been large sharks.

The scientists also found a number of crushing, pavement teeth of the Eagle Ray. The teeth are "plates" rather than individual pieces.

The expedition had as its aim the discovery of remains of forms of life of the eocene period of Maryland—which was approximately 40,000,000 years ago. Eocene, by the way, is a Greek word meaning "dawn of recent times."

Most of the society's work in the past has been done in the miocene period, which was only 20,000,000 to 30,000,000 years ago. It has a valuable collection of exhibits from that period.

The digging has been going on since Aug. 18 and will continue through this week. Then the members of the expedition will return to Baltimore and their vocations as science teachers in Baltimore schools.

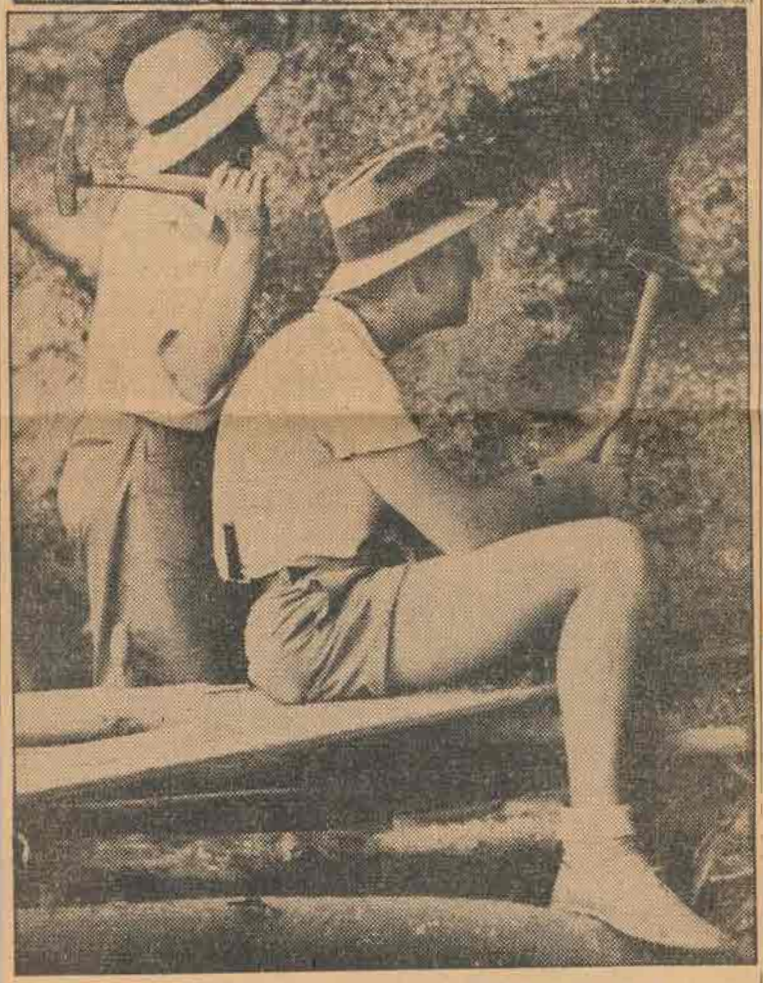
The party included Elra M. Palmer, John B. Calder, B. A. Calder, Earl H. Palmer, Robert Wheeler and William E. Lehr.

All Maryland was still at the bottom of a vast sea when the Eocene era dawned. Geological records, the type of deposits laid down and the fossils embedded in them, indicate that when the waters receded this section was a swampy marsh land, with tropical flora and fauna.

The finding of the crocodile remains further strengthens the belief that the climate of that period was tropical, members of the expedition said.

Evening Sun Spots

Even His Mother Wouldn't Know Him Now



ELVA M. PALMER

JOHN B. CALDER

REMAINS in the top photo do not look much like a crocodile, but some 40,000,000 years ago this croc was paddling gayly around the Potomac river section of Charles county and got bogged down in a swamp. The next thing he knew two Baltimore scientists had dug him out of strata of earth and shell. That was only a few days ago.

His mother might say "How he has changed!"

The same tricky swamp which got him in its grip also has yielded up remains of prehistoric oysters nine inches across, huge sharks and great eagle rays—commonly known as "skates"—and other forms of marine life.

Messrs. Calder and Palmer and four other science teachers of the Baltimore schools who comprise the Charles County Paleontological expedition sent out by the Natural History Society of Maryland, found the crocodile and his accompanying marine life from the Eocene period. He will be exhibited presently at the society's museum.

Friday, Oct. 11- 1935
Baltimore City College

Remains Of Ancient Saurion Discovered

The remains of a giant crocodile, over 40,000,000 years old, were found in the Potomac River cliffs on August 26, by Mr. Elra M. Palmer and Mr. John Calder, both faculty members of the Baltimore City College.

The jaws of the enormous saurion are three feet long; and the teeth, four inches in length and conical in shape, were intact in the jaws. The enamel still remained on the teeth.

Palmer Heads Party

Mr. Palmer said that two days of tedious and delicate work were required to remove the skull from the surrounding marl bed. The scientists found it necessary to construct a scaffold to lower the specimen, since it was twelve feet above beach level. It was sent to the laboratories of the Natural Historical Society of Maryland in six large blocks, totalling eight hundred pounds.

With this discovery, oyster shells were found measuring nine inches across, together with numerous cup corals.

Mr. Palmer, who headed the party of scientists, sponsored by the Natural Historical Society of Maryland, and who has been doing paleontological work in Maryland for seven years, was the actual discoverer of the crocodile.

Others in the "Charles County Paleontological Expedition" were the Messrs. William E. Lehr, assistant principal of Garrison Junior High School; Benjamin Calder, Earl Palmer, and Robert Wheeler.

The specimen was found in the Eocene deposit. At the time when the huge, savage creatures roamed the earth, Maryland's climate was semi-tropic. The waters extended almost to the Washington-Baltimore pike.

Later in the summer, the party found a second and smaller crocodile.

Natural History Society Uncovers Remains of Huge Crocodile in Cliffs of the Potomac; Other Significant Finds Are Made.

By the Associated Press.

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The snout is approximately 30 inches long, giving evidence as to the size of the giant animal. Imbedded in it are a number of cone-shaped teeth two or three inches long.

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The specimens found on this trip have been shipped to Baltimore and will be placed on exhibition in the society's hall there. The society already has a valuable collection of relics of the miocene period.

Members of the party included Elra M. Palmer, John B. Calder, B. A. Calder, Earl H. Palmer, Robert Wheeler and William E. Lehr.

2nd Charles County Paleontological Trip.

Aug-24th 1936 - Riverside, Md
B.a. Calder; O.L. Helm, Don. Helm
Winston Brundige, E.M. Palmer
arrived at Huttons about 11:30 am
ate lunch around 12:30 pm
caught insects in the early afternoon
and inspected the boat. & retired
early. We are treating our water
with HALOZONE TABLETS (Johnson & Johnson)

Aug-25-36 - Party left Riverside
in boat run by Mr Sts/c/ Dutton
at 730. arrived at 1½ miles above
Popes Creek - found nothing - ate
lunch - Papilio's and Royal Walnut
Caterpillar found. Left around 12
for Popes Creek - worked the length
of the cliffs but found nothing.
Came back to cliffs above P.C.
near the large estate - found
a few teeth. Crossed to Mathais
Point - Found fossil shells 8-15'
above beach (near Woodstock)

fossils wrapped in tissue their news paper. Crossed river for home encountered heavy Boat towing barge. It was making a circling movement as we approached we drew near and followed on but as boat straightened out we were running along side to their left. Taking their 2 blasts on the whistle to mean passon the right we turned back and did so. As we went on home a man in motor canoe came out and inquired if a man were overboard. The whole manoever was quite puzzling. We returned quite tired and hungry to set down to a meal of fried chicken and lemon meranque pie.

Aug-26-36 - Left Riverside in auto for Liverpool Pt at 11 o'clock Found quite a few specimens and Sharks teeth. Three crocidile teeth Quite a few teeth found in cliff

about 5 feet above beach. I took 2 pictures of the party at lunch. Made arrangements at Monroe's for boat tomorrow
Played cards at night
Had corn on cob, Ham, stewed tomatoes and butter scotch pie for supper.
Elva found crocadiles tooth in cliff Ben found one on beach.