

CAVE EXPLORATION IN THE EASTERN UNITED STATES.

Proofs not yet looked for have been examined in the Eastern United States to show how and when man first reached the Atlantic seaboard; whether, as the Indian found by John Smith and De Soto, he had come there in geologically remote times, or whether, having crossed the Mountains, as the Lenape alleges about 1370, he had found a region hitherto untrodden by human feet.

Granted that in America as in Europe, early man visited or dwelt in all large, well-lit and easily accessible caves, then it seems that if many races and epochs of culture have succeeded each other in the New World as in the Old, American caves, rather than surface sites of habitation should somewhere prove the fact. For there where rock walls and the limit of light and shelter would have forced every prehistoric cook to build fires and gnaw and throw bones upon the same spot, epoch denoting refuse layers would have been made, the oldest on the bottom and the latest on the top. If further in the search for such caves in America we may infer that those will tell the most which have longest confronted the greatest number of primitive inhabitants; then it seems that *those besetting the mountain passes and river pathways by which early man must have first penetrated the great forest and crossed the Appalachians would likeliest contain the complete record of his presence.*

To realize this is to regard as of superior import the rock habitations and shelters opening upon the mid continental water way of the Tennessee, or that of the Ohio, which, with its easternmost reaching tributary, the Kanawha-New River, would lead a foot-wanderer, the first comer let us suppose, at least pains from the Mississippi River over the mountains to the Eastern Coast. Many interior lying shelters it seems might be eliminated from the search for the sake of a first look at caves like these, which half blocking so presumably ancient a footpath might likeliest have caught presence tokens from every race that passed that way. More than this, a long series of them by the river might well show the direction of migration by the increased number of layers or the greater fossil age of the man-gnawed bones as we proceeded up or down stream.

That we were on a Mountain Pass of Archæological significance was soon apparent as we descended the rock beset channel of the New River-Kanawha. The riverside village sites (examined at Ivanhoe and Flanagan's) often contained mica as we learned at Indian Creek, Cotton Hill and Summer's Creek, and the mounds midway in the mountains at Dunkard's Bottom, Little River, Madam Creek, Sandstone and Gauley, in the two instances examined, containing mica discs, (at Dunkard's Bottom with an arrow-head cache and at Hinton with a skeleton,) were beyond all doubt the work of the builders of the Ohio tumuli, who had crossed and recrossed the mountains that way to get mica in North Carolina.

Leaving behind the Forge Cave, (described in the *American Naturalist* for July, 1894,) with its single geologically modern Indian layer, and searching every rock fissure on the stream, "Thompson's Shelter," (under Castle Rock, 26 feet above water, left bank of New River, $\frac{1}{4}$ mile above Pembroke Ferry, Giles County, Virginia,) close edging the narrow and level path of the river migrant, with mounds and Indian traces above and below it, and thirty-five miles from Stewart's Cave, Greenbriar County, West Virginia, where Jefferson discovered the Fossil Sloth, seemed the chosen receptacle for all the proof we sought. But our trench (10 feet 7 inches long by 19 feet 3 inches wide by 12 feet 8 inches deep) dug to rock bottom through (a) six inches of cave earth with charcoal, arrow heads and glass, (white man and Indian,) and (b) eight feet two inches of hearths and ashbeds with bones, pottery and flint chips (Indian) showed no man-associated animal more ancient than Black Bear, Wolf, Grey Fox, Deer, Raccoon, Woodchuck, Squirrel, Rabbit, Cave Rat, Wild Turkey, (numerous,) Duck, Land Tortoise, Snapping Turtle, Catfish, (frequent,) Snake, Unio, (three species,) and Triodopsus. The bones grew scarce and the pottery ceased as we dug below the fifth foot, but the intermixed sand showed that the river had been in the cave and though there were isolated masses of charcoal eight feet eight inches down there was no sharp line of distinction between them and the hearths above, or proof, in the absence of presumably older bones, that this lower refuse, occurring in the now purer sand, denoted a geologically older epoch.

Examination of many river-fronting cliffs brought us at length to the imposing sandstone rock shelter, known as the Buffalo House, 50 miles down stream, (right bank of New river, Summers County, West Virginia, at mouth of Laurel creek, 23 feet above it and 405 feet from the river, with two mounds $\frac{1}{4}$ mile from its entrance). There the evidence at Thompson's was repeated in a trench 8 feet wide, 20 feet long and 11 feet deep, dug down to formidable masses of fallen sandstone. It showed (a, 1 foot) dust, bones, Indian remains, nails and glass, (White Man and Indian,) and (b, 5 feet) a series of hearths mixed with bones, pottery, arrowheads and chert chips, (Indian,) resting on a substratum of roof splinters through which charcoal had trickled to a depth of 11 feet, and containing the remains (kindly identified with all the other bones and shells by Prof. Cope) of the Bear, Panther, Deer, (very common,) Squirrel, Rabbit or Rodent, Land Tortoise, Turkey, Bird, (undetermined,) Snail, Unio, (two species,) Periwinkle and walnut. Again we had missed all trace of an earlier age of man devoured animals while the human relics were those of the pottery-making Indian of the Forge Cave, of Flanagan's midden heap, and, it seemed, of the mica miners of Hinton's Mound, 10 miles up stream.

Below the Buffalo House mounds on distant hills still followed the river's course, but the valley narrowed into an impassable gorge, which still traceable Indian trails had avoided by a long detour, and where for fifty miles a man could not have walked along the stream. This change in the valley weakened the force of deductions from our excavations, for important as the trans-Appalachian pathway still seemed, trodden as it had been by the marauding Indian, and by the mica-hunting builder of mounds, the first comer, older possibly than either, confronted by this

obstacle of the gorge, might have turned back and crossed the mountains another way. The Mule Pen sandstone shelter, fronting this forbidding chasm, (left bank of Kanawha, 63 feet above the river, $\frac{1}{2}$ mile below Kanawha Falls,) did not surprise us with the scantiness of its human remains. There our trench 8 feet broad, 10 feet long and 5 feet deep into undisturbed yellow clay mixed with pebbles and coal showed (a, 1 foot) glass, nails, arrowheads, chips and pottery, (White Man and Indian,) and (b, 1 foot) charcoal, pottery, and arrowheads, (Indian,) containing the sparse remains of Deer and two species of Unio.

Once past the Kanawha gorge, the midden and mound-marked shores of the broadening valley betokened that the tide of early habitation had returned to the river, and we saw the pleasing lawns by which a man might walk unhindered from Charleston, West Virginia, to the Mississippi, but the absence of caves in the low, sandstone bluffs, where many ravines were faithfully explored, deprived us of that record which would have availed more there than anywhere else. A large midden heap examined at Macker's Station, (right bank of Ohio River, 6 miles above the Kanawha's mouth,) containing the bones of Man, Bear, Grey Fox, Dog, Elk, Calf, Opossum, Raccoon, Turkey, Soft-Shelled Turtle and Unio, (seven species,) might or might not have been left by the builders of the neighboring earthworks at Marietta, Grave Creek and Charleston, and its still existent fauna added nothing to the evidence of an ancient occupancy.

Henceforth for 200 miles the wooded sandstone ridges edging the Ohio lacked the cave evidence we wanted. In vain we halted for information by the gentle slopes, in vain examined many ravine hidden shelters, dampened by cataracts, until the Falls of the Ohio at Louisville were passed. There again entering a limestone region, we reached the conspicuous, but scarcely accessible, Boon's Cave, (right bank of Ohio, 3 miles above Brandenburg, Harrison County, Indiana.) But its single surface film of well-like refuse proved little, and we went on chagrined at the limestone river caves which, generally opening from well-like sinks, were damp, dark and unfit for human habitation. After penetrating an Indian layer containing Deer, Raccoon, Rabbit, Rodent, Turkey, Land Tortoise, fresh-water Drumfish, Catfish, Snail, (Mesodon and Anguispina,) at Alton Rockhouse, (right bank of Ohio, 1 mile below the mouth of Little Blue River, Crawford County, Indiana,) our work was interrupted by the owner, and leaving with disappointment the broken record, we turned down the river to reach at last the once celebrated robber den, well known to flatboatmen and pilots as Cave-in-Rock, (right bank of Ohio River, 30 miles below Shawnee Town, Hardin County, Illinois.) But at this most conspicuous shelter on the Ohio, river freshets had washed out our evidence, leaving upon the cave floor the mixed remains of an Indian stone box graveyard and midden heap, which had fallen in through a sink-hole from the hill above. Meanwhile, our examination of the twenty-three-miles-long Wyandotte Cave, Crawford County, Indiana, proved that Indians had carried carbonate of lime from the "Alabaster" quarry observed by Mr. Collet to the torch room nearly two miles away underground, and that to light their flint mining work, discovered by Mr. Hovey in the "Pillared Palace," they had used torches, as proved by my experiment, of hickory bark.

These were new facts for Archæology, as was the discovery of another source for the nodular-flint blades of Ohio Mounds at a worked deposit of the native rock, (two miles southwest of Brandenburg, Meade County, Kentucky,) and the study of cave burial at Peckenpaugh's Cave, where human bones, along with charcoal, Deer, Rodent and Unio scattered the surface of a small underground chamber, only accessible by rope from above. But as these caves were out of the river way and unsuited for habitation, their study, however instructive, added nothing to the main object of search and left us with the Lake and Morgan Rock shelters (left bank of Ohio, under Jeffrey's Rock, 3 miles from the river and 4 miles above Hawesville, Hancock County, Kentucky,) as our last available test for the antiquity of man on the Lower Ohio. At Lake's Cave our trench, 14 feet long by 10 feet wide by 2 feet 7 inches to 5 feet 6 inches deep, reaching bands of pure stratified sand and clay, with water at 5 feet, revealed no great antiquity for the midden heap (containing the remains of Man, Wolf or Dog, Ground Hog, Rodent, Raccoon, Deer, Turkey, Land Tortoise and Unio,) where the cave occupants had buried two dolicocephalic skeletons, with decayed teeth and jaws perforated by abscesses, in crouching positions against the inner wall. At Morgan's Cave the single Indian layer on a projecting ledge, with its remains of Raccoon, Deer, Rabbit, Turkey, Bat, Bird, Lizard, Unio, (two species,) Honey Locust, butternut, pignut, acorn, hickorynut, corncob and chestnut burr indicated no great antiquity and proved no predecessor for the cave inhabitant of the surface. Still these latter shelters, though of grand dimensions, were obscured by trees, and removed as they were from the river, could not, with their doubtful water supply, be regarded as important evidence against the existence of a geologically ancient people on the final westernmost reach of the great water path.

Our expedition now ended of 600 miles down an important route of ancient North American travel, by way of the once chilly haunts of alleged Paleolithic Men in Ohio and Indiana, and through the preferred territory of the "Mound Builder," had failed to find cave-buried traces of any pre-Indian wanderer. But, striking as this fact was when all is summed up, it was not so striking as the absence in our cave cut trenches of underplaced remains of the older animal inhabitants of the region. The Fossil Sloth, the Mastodon, the Giant Chinchilla, the Horse, the Reindeer had been thereabouts before the epoch of the midden heap fauna unearthed. But where were they? Had they never come into the caves to die? Had carnivora never dragged thither their carcasses? Or had freshets washed away their once deposited bones? To account for the absence of such fossils was not easy, as we dug downwards, unless we supposed, which was possible, that the man-selected shelters examined by us were too open and too light to serve, like the "bone hole" at Port Kennedy and Hartman's Cave in Pennsylvania, as the chosen dens or tombs of animals.

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Aldie, Doylestown, July 4, 1894.

H. C. MERCER.

Auth.

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DEPARTMENT OF AMERICAN AND PREHISTORIC ARCHÆOLOGY OF THE UNIVERSITY OF PENNSYLVANIA.

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Evidence till recently unlooked for has been examined in the Eastern United States to show how and when man first reached the Atlantic seaboard; whether he had come there in geologically remote times, or whether, having crossed the Mountains, as the Lenape alleges, about 1370, he had found a region hitherto untrodden by human feet.

Granted that in America as in Europe, early man visited or dwelt in all large, well-lit and easily accessible caves, then it seems that if many races and epochs of culture have succeeded each other in the New World as in the Old, American caves, rather than surface sites of habitation should somewhere prove the fact. For there where rock walls and the limit of light and shelter would have forced every prehistoric cook to build fires and gnaw and throw bones upon the same spot, epoch-denoting refuse layers would have been made, the oldest on the bottom and the latest on the top. If further in the search for such caves in America we may infer that those will tell the most which have longest confronted the greatest number of primitive inhabitants; then it seems that those besetting the mountain passes and river pathways by which early man must have first penetrated the great forest and crossed the Appalachians would likeliest contain the complete record of his presence.

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Dunkard's Bottom & Hinton, W. Va.

Leaving behind the Forge Cave, (described in the *American Naturalist* for July, 1894,) with its single geologically modern Indian layer, and searching every rock fissure on the stream, "Thompson's Shelter," (under Castle Rock, 26 feet above water, left bank of New River, ¼ mile above Pembroke Ferry, Giles County, Virginia,) close edging the narrow and level path of the river migrant, with mounds and Indian traces above and below it, and thirty-five miles from Stewart's Cave, Greenbriar County, West Virginia, where Jefferson discovered the Fossil Sloth, seemed the chosen receptacle for all the proof we sought. But our trench (10 feet 7 inches long by 19 feet 3 inches wide by 12 feet 8 inches deep) dug to rock bottom through (a) six inches of cave earth with charcoal, arrow heads and glass, (white man and Indian,) and (b) eight feet two inches of hearths and ashbeds with bones, pottery and flint chips (Indian) showed no man-associated animal more ancient than Black Bear, Wolf, Grey Fox, Deer, Raccoon, Woodchuck, Squirrel, Rabbit, Cave Rat, Wild Turkey, (numerous,) Duck, Land Tortoise, Snapping Turtle, Catfish, (frequent,) Snake, Unio, (three species,) and Triodopsis. The bones grew scarce and the pottery ceased as we dug below the fifth foot, but the intermixed sand showed that the river had been in the cave, and though there were isolated masses of charcoal eight feet eight inches down there was no sharp line of distinction between them and the hearths above, or proof, in the absence of presumably older bones, that this lower refuse, occurring in the now purer sand, denoted an epoch geologically older.

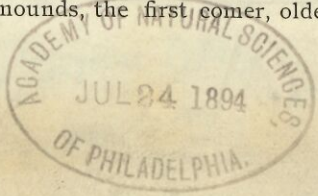
Forge Cave
Castle Rock Va.

Stewart's Cave W. Va.

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Buffalo House

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Boon's Cave

Cave-in-Rock

Wyandotte Cave Ind.

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Flint Peckenpaugh's Cave

Morgan

Lake's Cave

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H. C. MERCER.

Other Tenn. Caves
Big Bone, Carroll's, Indiana, Cooperas (1896)

other caves see Mason 1956: 158-9

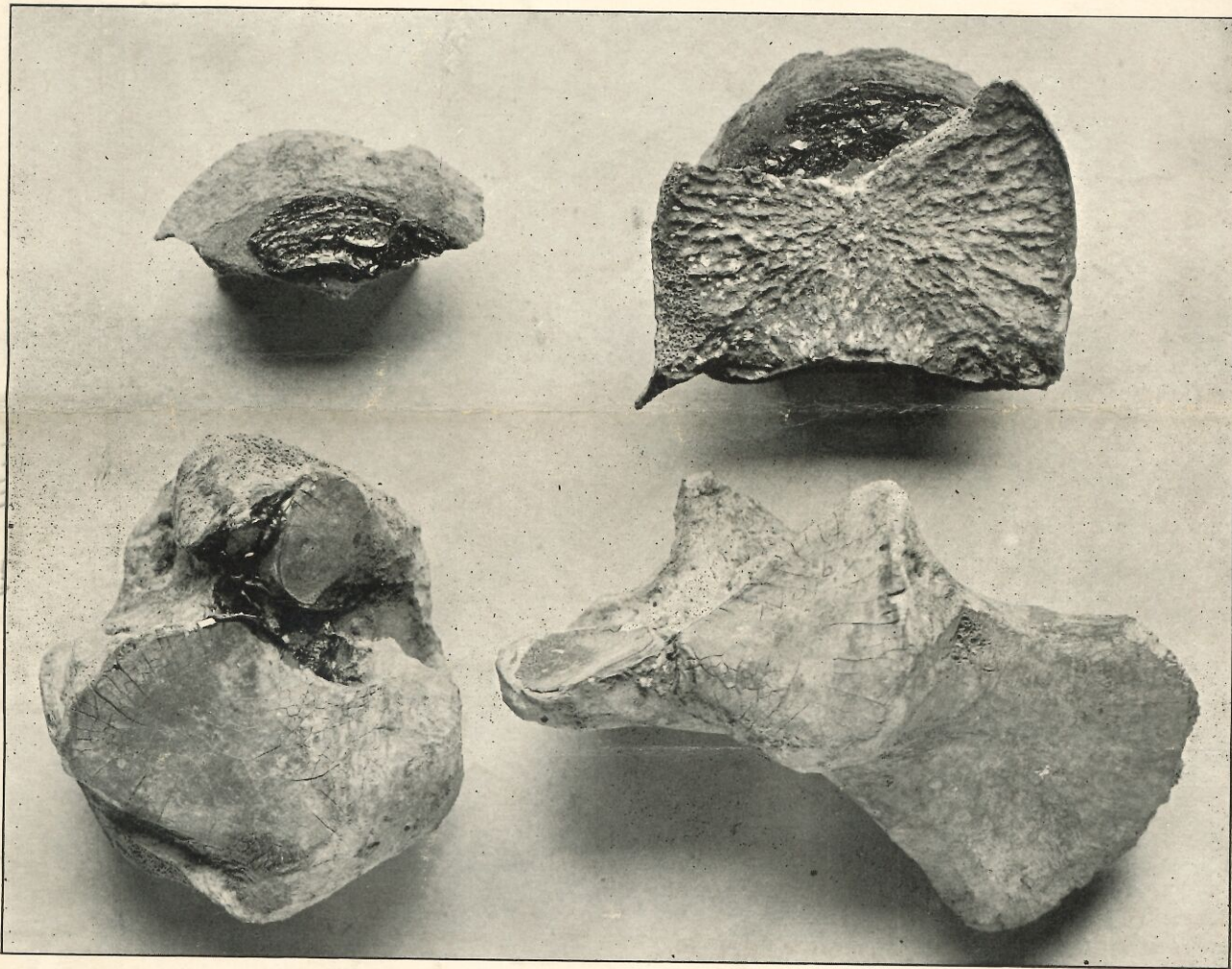
THE DEPARTMENT OF
ARCHÆOLOGY AND PALÆONTOLOGY
OF THE
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Preliminary Report.

To learn that the remains of Pleistocene Man have been abundantly found in the caves of Europe, that equally significant remains of later savage, barbarous and civilized peoples have been similarly discovered in the caves of Europe, Asia and Africa, and that the remains of the Indian and the recent White Man have been found in caverns in North America, warrants the supposition, nowhere disallowed by past investigation, and valuable as an hypothesis, that primitive peoples generally throughout the world have left traces of their presence upon the floors of accessible caves. In the subterranean floor deposits of the new world, therefore, we may suppose that the problematic existence of Pleistocene Man might be soonest and easiest demonstrated, while with hardly less ground we may urge as valuable testimony in the American region the absence of such remains in significant underground shelters. Not unreasonably such absence, occurring invariably at these immemorial halting places of men and animals, might infer that Pleistocene Man had never existed in the adjacent regions.



Bones of the Fossil Sloth (*Megalonyx*), astragalus calcaneum and epiphysis of vertebra fresh in appearance and with remains of attached tissue and ligaments found associated with the refuse of Porcupines and Cave Rats in a dry passage 900 feet inward from the entrance of Big Bone Cave, Van Buren County, Tennessee, May, 1896.
Two thirds natural size.

By this course of reasoning and investigation the University of Pennsylvania has sought to solve definitely the question first to attract and last to puzzle American students—How long has Man existed in the New World? Striving to limit the speculations of archæologists, the work has proceeded by degrees to reconcile with geology their study of pre-Columbian peoples, which, fascinating as it is, has lacked thus far subdivisions, landmarks and starting point, while an effort to eliminate, through the investigation of significant caves, one region after another from the field of search, has sought to narrow the area of possible discovery from the point of view explained. Having shown on the one hand that certain caverns like the fissure at Port Kennedy, (right bank of Schuylkill River, 3 miles below mouth of Perkiomen Creek, Montgomery County, Penna.,) containing in large quantity the remains of Pleistocene

animals without relics of Man, are geologically ancient, on the other hand, a fact of much significance has been demonstrated for the first time, namely, that a considerable number of other caves are modern, since their floors, well supplied with the refuse of Indians and later White Men, below which remains of geologically older peoples would not have been lacking in Europe, have failed to reveal any relic of Pleistocene Man.

In these several instances the geologically modern remains (human) and the geologically ancient remains (animal) have lain apart in distinct caves, and hence less available for comparative study, but the recent expedition to Tennessee, resulting in the examination of three caves in which the old and new deposits lay in juxtaposition, has enabled us to push the question farther by studying the relation between the ancient and modern strata where, at their point of contact, it was most significant.

More broken and scattered even than at the remarkable tomb of extinct animals at Port Kennedy were the remains of the Tapir, Peccary, Bear and small fossil carnivora at Zirkle's Cave, (left bank of Dumpling Creek, about 5 miles above its mouth in French Broad River, Jefferson County, Tennessee,) visited by Professor Cope in 1869. Dislocated as before after the flesh had rotted from the bones, crushed by a force which had split into fragments the hard teeth, the remains had found their way into a mass of clay mixed with sand, which at one time filled the cave. Hardened finally into breccia not easily broken with the pickaxe, this bone bearing earth had disappeared at many points to make room for a deposit of cave earth containing the remains of the Rattlesnake, Woodchuck, Opossum, Rabbit and Cave Rat, and it is the important relation of this latter modern earth, with its bits of mica and Indian pottery, to the older breccia that will constitute the material for a final report.

Previous examination, in 1893, at the Lookout Cave, (left bank of the Tennessee River, one-quarter of a mile below Chattanooga Creek, Hamilton County, Tennessee,) had revealed the bones of the Tapir and Mylodon in the lowermost zone of a floor deposit of Indian refuse, and upon the recent expedition the cave earth with its "culture layer" was entirely removed for 58 feet inward from the entrance to settle beyond doubt the relation of these fossils to the Indian remains resting upon them. At this significant spot, where again the Pleistocene and recent deposits lay in contact, and where the specimens found were labeled according to their position, whether the black (modern) earth above or the yellow (ancient) earth below, a completed examination should decide whether Man had or had not encountered the Tapir and Mylodon in the Valley of the Tennessee.

After a visit to "Indian Cave" on the Holston River, Carrol's Cave, and the Copperas and Bone Caves, near Tullahoma and Manchester, Tennessee, a new set of conditions was presented at Big Bone Cave, (1 mile from left bank of Caney Fork and about 2 miles above its mouth in Rocky River, VanBuren County, Tennessee.) There the bones of the Gigantic Fossil Sloth, (*Megalonyx*.) still retaining their ligaments, were exhumed from a dry deposit of the refuse of Porcupines and Cave Rats, mingled with fragments of reeds used as torches by Indians in a gallery 900 feet from the entrance, thus presenting us in the final summing up of this strange evidence a new notion of the relation of the modern Indian to this extinct animal, whose remains outnumber all its fossil contemporaries at Port Kennedy.

Thanks are due to Dr. William Pepper, to the Board of Managers and to Professor E. D. Cope for their kind cooperation in the expedition thus finished, which, at a cost of \$300, has presented the Museum with the specimens now under examination. These, if not attractive, are important. Representing data which account for the presence of man together with the bones of extinct animals, they explain his visits at two caves situated in the Eastern Valley of Tennessee at a height of about 600 to 700 feet above the sea and within earlier reach of an overwhelming ocean in Champlain time, and again at a third cave, which, 300 feet higher on the Continental floor and looking westward from the slopes of the Cumberland table land, stands for that part of the Appalachian region whither animals and Man (if he existed) might have found convenient refuge when lower areas sunk, as is alleged, beneath the level of the invading waters.

Aldie, June 4, 1896.

HENRY C. MERCER.