

SCIENCE AND THE COLUMBIAN EXPOSITION. By J. L. CAMPBELL.

[ABSTRACT.]

In this paper the author discussed the relation of science to the Exposition of 1893, the subject being limited to the *classification* and the *awards*.

The suggestions presented were based chiefly on the writer's knowledge of the subject from his experience as Secretary of the Centennial Exhibition, 1876.

RECENT ARCHEOLOGICAL DISCOVERIES IN SOUTHERN OHIO. By WARREN K. MOOREHEAD.

METHODS OBSERVED IN ARCHEOLOGICAL RESEARCH. By WARREN K. MOOREHEAD.

THE PRE-HISTORIC EARTHWORKS OF HENRY COUNTY, IND. By T. B. REDDING.

The mounds and enclosures of this county are not so large as some of those of Madison, Randolph and Wayne counties adjoining us, but are large enough and numerous enough to be of interest. While but very recently reclaimed from the wilderness and from savage life, Henry county has its antiquities; an unwritten history, a history full of human life, human joys and human sufferings; of organized and aggregated labor; of war, battle and bloodshed; of passions and worship. But the joys, the sorrows, the loves, the hates, the struggles and the triumphs of those long centuries past have faded forever out of sight, except so far as preserved in these ancient and rude earth works. Since they lived, thought and acted—

“Year after year its course has sped;
Age after age has passed away.
And generations born and dead
Have mingled with their kindred clay.”

—Finley.

So far as my knowledge extends there are twenty artificial mounds and fourteen enclosures within the limits of Henry county. There are also certain mounds or elevations that have much the appearance of artificial mounds, but of which I am not sure, numbering in all twelve to fourteen,

and one uncertain enclosure. Of these the strong probability is some are artificial. Doubtless some of the smaller mounds and enclosures have long since been obliterated by cultivation.

I will now give a detailed list of the mounds and enclosures of Henry county, which I have represented upon an outline map. There is a circular earthwork, or enclosure, on E. S. E. Section 1, T. 16, R. 10, in Franklin township, owned by J. P. Nicholson, about sixty rods east of the pike. This has been almost obliterated by long cultivation. It is about 150 feet in diameter. I got my information mainly from Jethro Wickersham, whose father once owned the farm. There is a circular inclosure on the line between the N. E. and N. W. quarters of Sec. 22, T. 17, R. 10, Henry township, 100 rods west, and one and three-eighths of a mile south of the court house, on lands owned by R. M. Chambers and M. L. Bundy. It is still in the woods though mostly cut off. Its diameter (measuring in all cases from the center of the embankments), is 115 feet; the height of embankment, at highest point from bottom of ditch is about three feet. There is an open place, or gateway, on the east side, about twelve feet wide. There is the appearance of a small mound inside of the enclosure toward the west side, about fifteen feet in diameter and eighteen to twenty-four inches high. Width of ditch about eight feet, of embankment about fifteen feet. Large trees have grown, died and decayed within this enclosure and its ditches and upon its embankments since it was built. There is also a small mound in S. W. quarter Sec. 7, T. 16, R. 11 E., nearly obliterated by cultivation, but I have not made a personal inspection of it. There is another enclosure about 250 feet in diameter on the west side of the N. E. quarter of S. W. quarter Sec. 2, T. 17, R. 10, owned by Joseph Dorran. In early times this enclosure was a noted structure. Its banks were five or six feet high, and the ditches were clearly marked, but the northern turnpike runs through the eastern side of it, while the larger part of it has been under cultivation for more than fifty years, and it is gradually being obliterated. Its banks are now not more than one to two feet high. I will say here, that in all the enclosures in this county the ditches are on the inside of the enclosure. On the northeast quarter of this same section, mostly on the southwest quarter of the quarter and less than half a mile to the northeast from the above named enclosure, is the largest group of enclosures and mounds found in the county. They are situated on the eastern part of the farm of John C. Hudleson, and cover an area of ten to twenty acres. There are in the group nine well defined enclosures, and one or two apparent enclosures which

have been so completely obliterated by the plow that I cannot be certain about them. I have visited and measured all of these. The largest is situated farthest east, near the line and very near the N. E. corner of the quarter quarter. It is 650 feet in circumference and is an ellipse, longest east and west. Its east and west diameter is 215 feet. The north and south is about 150 feet. Within this enclosure is a large mound, longest east and west and having much the appearance of two mounds joined to each other, the western mound being the highest. The length of the mound, east and west, is 140 feet and it is about 100 feet wide, north and south. The height of the mounds above the general original surface is about ten feet; above the bottom of the ditches about fifteen feet. The ditch varies in depth but is probably six feet in deepest place, and shallows off into three feet at places. It is mostly in the original forest, but has its south embankment in a cultivated field. On each side of the eastern part of the mound there are slight elevations, whether natural or artificial I cannot tell. They give the mound an appearance of an attempt to imitate a cross. I have a map of this whole group, and an elevation showing shape of the large mound. This mound has been dug into in four or five places at different times.

In the fall of 1890 myself and several others made an exploration of parts of this mound. We dug a trench six to eight feet deep from the east side to the center, and one from north to south through the western end of the mound. We found two places in the last, one within eight or ten feet of each end, where the clay had been burned hard, and yet there were no ashes. Betwen these two places about thirty feet apart we found deposits of ashes but no burnt clay, indicating that the ashes had been removed from the places of fire and thrown in heaps at a distance of a few feet. These places of burnt earth were about two by three feet in size and burned to the depth of ten or more inches. One of them had the appearance of having been raised above the surrounding earth seven or more inches. It was longest east and west and had somewhat the appearance of the figure 8. Near the center of the mound in the trench dug from the eastern side we found, at a depth of nearly nine feet, a large bed of ashes some six by seven feet in diameter. The bed was slightly hollowed out and the ashes at deepest place, near the center, were not less than four to five inches in depth. Among these ashes we found much charcoal and many fragments of bones, some of which I have with me. I am not able to say from what animal they are. A little to the northwest of

this bed of ashes was another bed of ashes and burnt clay which had been explored at some time by other parties, but I cannot give results. The large bed found by us was burned hard, of a dull red color, to a depth of about eight inches.

At the time of making the explorations of the large mound we discovered another small mound about sixty rods to the northeast of the large one, 100 feet in diameter and about six feet high, situated upon a point of a hill overlooking Blue river valley, and in front of which was formerly a marsh of several acres. The ditch and enclosure around the mound are very distinct, it having only very recently been cleared of timber. The ditch at places is three feet deep and the embankment averages about two and a half feet in height.

To the east of this a few rods, just across a deep ravine on the north edge of a hill, is an embankment of about six feet in height and nearly two hundred feet long. To the south of the ditch behind the embankment, which is not less than forty to fifty feet wide, the hill rises about twenty feet. The excavation behind embankment is longest east and west. It is wholly unlike anything else found in the county, and no one is able to give any account of its origin.

Ten rods west of this large mound and enclosure is another enclosure, partly in the woods but mostly in the cultivated field. The ditch is well preserved in that part in the woods, but is almost wholly obliterated in that part within the field. As near as I could determine this enclosure was about one hundred and fifty feet in diameter. The ditch on the north side is now about two to two and one-half feet in depth. I am inclined to the opinion that there was also a mound probably two or three feet high within its enclosure, but if so it is nearly levelled. One hundred feet to the northwest of the last is another enclosure, all in the woods, ninety-four feet in diameter and with shallow inside ditches at present one to three feet deep, and having a gateway on east, opening toward the large mound already described. Near the gateway, on the south, is the appearance of a small mound about twelve feet in diameter and twelve to eighteen inches high. It has been dug into recently and seems to be a mass of gravel. I am in doubt whether it is natural or artificial. One hundred feet from the last is an artificial mound forty feet in diameter and about six feet high. The south edge is in the cultivated field but the main body of the mound is in the woods. It has been recently dug into by Joshua Holland, of North Carolina, and Mr. Reynolds, of the Smithsonian Institute,

but work was not completed and nothing of importance was found. This is the only clearly identified mound in the whole group not within a circular enclosure. About one hundred and fifty feet south of this little mound, within the cultivated field, are the remains of a large circular enclosure with a gateway facing the east and the large enclosure already described. It is two hundred and fifty feet in diameter and the ditches are from three to five feet or more in depth, notwithstanding years of cultivation under the plow. There is the appearance of a mound in the western part of this enclosure, about forty feet in diameter and about two feet high.

One hundred feet south of the above is another enclosure one hundred and fifty feet in diameter, with ditches two or three feet in depth. It has also an opening to the east, but not so well marked as the others. This enclosure is almost immediately east of the house on said tract and just east of the old orchard. A long period of cultivation has doubtless much lowered its walls. There is a slight indication of a mound near by, but if it is one the plow has so completely obscured the evidences that it is not safe to call it one. About two hundred and fifty feet to the southeast, in the edge of the grove, is another enclosure one hundred feet in diameter, with ditch on inside two to two and one-half feet in depth. It has also a gate or opening on the east facing the large enclosed mound. Sixty feet to the southeast of the above is another enclosure ninety feet in diameter, with inside ditch eighteen to twenty-four inches in depth, and having an opening to the northeast facing the large enclosure and mound. There is also a small mound in the center of this enclosure.

Going another hundred feet to the southeast we find another enclosure one hundred and twenty feet in diameter, with a mound in the center from three to five feet high. The ditch is from two to three feet deep. There is an opening on the northeast facing the large enclosure and mound. East, slightly north of the above and adjoining it is another enclosure one hundred feet in diameter. The ditch is shallow, not more than eighteen to twenty-four inches in depth. The embankment on the west and adjoining the preceding seems to be common to both enclosures. The space between the ditches of the two is about twenty to twenty-five feet. To the northeast is a low, wet place. The opening is not very clearly marked in this last enclosure but it seems to be to the east. North of this last, about three hundred feet in the cultivated field, are very strong evidences of another enclosure, but it has been so disfigured by the plow and long cultivation that I do not feel safe in saying positively that it is an artificial enclosure,

but it is very suggestive of one, and is about one hundred and sixty feet in diameter.

There are three or four other little hillocks in the neighborhood of these enclosures that look much like small mounds. On the west side of the pike, about sixty or seventy rods west of the large mound, is a gravel bank in which a number of human skeletons have been found. There was found in this bank, recently, the skeleton of a dog, about six feet below the surface. Skeletons have been found both in a horizontal and in an erect posture. In it are also found pieces of charcoal; also shafts of earth and clay. These are round and from five to eight feet deep and two or three feet in diameter, as if a grave had been dug and then filled with earth. It is probable that there was a mound on this bank, but it has been so long worked and so much of it removed that it cannot be verified. It was at least a burial ground. The skeletons mostly crumble on being exposed.

Across the river, about a mile to the west, on the N half of Sec. 3, T. 17, R. 10, belonging, also, to Mr. Hudleson, is another large circular enclosure in cultivated ground. It is probably 150 feet in diameter, and before the land was cleared was enclosed by embankments five to six feet high,—but a long period of cultivation has nearly obliterated the embankments. I do not know whether it enclosed a mound or not, but probably did. There was, until recently, a mound on S. W. S. E. quarter Sec. 1, T. 17, R. 10, owned by Joseph Smith, about thirty rods west of his house. It was about fifty feet in diameter, and eight to ten feet high, before cultivation. During the last year Mr. Smith plowed it down and used the earth to make an embankment along the creek near by. He tells me that he came to a bed of ashes and charcoal in the center of the mound, about six feet square but did not examine to ascertain the depth. He did not notice any fragments of bones or other articles.

There is also a mound on the E. S. E. quarter Sec. 24, T. 16, R. 10, in Franklin township, now owned by John Gilbert. It is small, probably forty feet in diameter, and three or four feet high. There is another mound in the same township on S. W. S. W. quarter Sec. 15, T. 16, R. 10, owned by Charles Stubbs. It is about three feet high and fifty feet in diameter. It has been dug into and ashes and coals found. Another mound, in this township, is found on S. W. S. E. quarter Sec. 28, T. 16, R. 11, owned by D. H. Fenstamaker, about thirty rods south of the Central railroad, about six feet high and seventy-five across, before plowed down. There is a small hillock, or mound, in the southeast corner of the county, about ten feet

high and fifty in diameter, on the top of which formerly grew a large beech tree. It is supposed, by some, to be artificial, but others think it natural. I have not examined it. It is in the N. E. quarter Sec. 31, T. 16, R. 12. There is a small mound, now almost obliterated, on the N. W. S. E. quarter Sec. 14, T. 16, R. 9, owned by Daniel Jackson. Was probably twenty-five feet in diameter and four feet high. Was dug into and ashes and coals found. About a mile southwest of the above, on the S. W. quarter Sec. 3, T. 16, R. 9, owned by John Small, is another small mound of about the same size of the one just described.

On Charles McDormain's farm near the S. E. cor. of Sec. 20, T. 17, R. 10, is a mound about fifty feet in diameter and three feet high. It has been under cultivation for more than fifty years, and was, originally, probably over six feet high. It has been dug into. Flints, ashes and coals were found. On the Hoover place, west of the barn, in the N. E. quarter Sec. 5, T. 16, R. 10, is a small mound, now about fifty feet in diameter and two feet high. It has been plowed over fifty years or more. There is a small mound on the farm of Jonathan K. Bond, on the N. W. S. W., quarter Sec. 24, T. 17, R. 9, probably forty feet in diameter and four feet high. This, and the one on McDorman's farm, and the large circular enclosure on the west part of Hudleson's farm and a small mound on Benj. Wilhoit's farm are the only artificial earthworks of which I have any information, which are located on the west side of Blue River, in this county. There is a small mound on S. E. N. E. quarter Sec. 28, T. 16, R. 10, in Spiceland township, on the farm owned by Hinshaw's heirs. It is represented as about fifty feet across and three or four high. It was dug into, a few years ago, and ashes and coals found.

One of the largest and best preserved mounds is found on N. E. S. E. quarter Sec. 26, T. 17, R. 10, owned by John R. Peed, about two and a half miles southeast of New Castle. Until recently it was in a forest, but has been cleared, and, the embankments plowed down and the ditches partly filled. It is sixty-five feet in diameter, and at least six feet high. The ditches were formerly about three feet deep. I first saw this mound when I was a small boy, it being near the farm on which I was brought up, and was often visited by me. When I first saw it, there was growing on its top a large red oak three feet in diameter. The mound has been dug into several times. Ashes, coals, bones and fragments of pottery were found, but they have been scattered and carried off, and I cannot find any of them to examine. I have recently visited the mound. It is surrounded by an enclosure

130 feet in diameter from the crest of the embankment on one side to that on the other. The mound is situated in western part of the enclosure, fifty feet west of the eastern side. There is a gate, or opening in the eastern wall. The mound is at least six feet high above the general level of country, and was about nine feet above bottom of the ditches when I first saw it. The old red oak has blown down, but the stump is still lying on the mound. At the ground it is about five feet through, and, as near as I could calculate from the annual rings of growth, it was at least 280 years old. There is, also, a small mound on the S. N. W. quarter Sec. 18, T. 16, R. 12, owned by J. V. Huffman and now occupied as a cemetery. It is about seventy feet in diameter and was formerly eight to ten feet high, and is now about six feet in height. It was dug into a number of years ago and ashes, coals and burned stones were found. Near by, about 150 feet to the Northwest is a pit from which the earth was probably taken to build the mound.

Daniel Harvey informs me that there are three small mounds on N. W. N. W. quarter Sec. 36, T. 18, R. 10, now owned by Thomas Graham, arranged in a crescent shape. The large mound occupies the center and two small mounds the ends. The center mound was dug into about thirty years ago by Mr. Harvey and others, but found no skeletons nor remains. The central mound is about ten feet high and sixty feet in diameter, and the outside mounds are about thirty feet in diameter and four or five feet high, so Daniel Harvey tells me. H. B. Hernly informs me that there is a large mound on W. N. W. quarter Sec. 25, T. 18, R. 10, owned by him. It has not been explored and may or may not be artificial. I have had no opportunity to examine it. There is a mound five or six feet high and twenty five to forty feet in diameter on the N. E. N. E. quarter Sec. 27, T. 18, R. 10, now owned by Benj. Wilhoit. It has been dug into and shells, etc., found.

The graves of a departed race are found in a great many of the gravel banks of the country. I have the skulls and some of the other bones, and a lot of beads, pendants, gorgets, and other articles, taken from some of these graves upon John Hosea's farm, formerly owned by my father, near this city. These pendants, gorgets and beads are mostly made from the shell of a kind of Conch, called *Busycon perversum*, found along the Atlantic coast from Massachusetts south to the Gulf of Mexico. Some are from other kinds of shells found along the same coast. Whether these are the remains of the Mound-builders, or of a later race, is unknown. They

are very similar to many of the articles found in the mounds in such position as to lead to the supposition that they were placed there by the builders of the mounds.

ON LECONTE'S TERRAPINS, EMYS CONCINNA AND E. FLORIDANA. By O. P. HAY.

ON THE BREEDING HABITS, EGGS, AND YOUNG OF CERTAIN SNAKES. By O. P. HAY.

Notwithstanding the deep impression which serpents have made on the human mind, as shown in literature and in popular conversation, it is surprising how little accurate information has been accumulated concerning some of their habits. The densest ignorance, the result of inattention and general lack of interest, prevails with regard to some of the most interesting matters connected with the life-history of snakes; while on the other hand, many of the popular notions about the powers of these animals are either wholly false or are gross exaggerations of the truth. The breeding habits of our snakes, even of the most common species, belong among the things about which little is known. Even our biologists have given but little attention to this subject, while unscientific people simply recognize the fact that nests of snake eggs are occasionally met with. For instance, who would not suppose that all the essential facts are known concerning the reproduction of the common black-racer, *Bascanion constrictor*? Nevertheless, where have we been told when it lays its eggs, how many there are of them, how they are concealed, and when they hatch?

Some snakes are known to lay eggs which after a period produce young. Other snakes are known to retain the eggs within the body until the young have attained sufficient size and strength to care for themselves after birth. Still other species are supposed sometimes to lay eggs, at other times to bring forth living young,* or to produce some eggs and some living young at the same time.† There are, indeed, oviparous snakes and snakes which are ovoviviparous, and there is a conspicuous difference in their eggs. The eggs of the oviparous species are furnished with a thick, tough, flexible covering, or "shell," while the eggs of the species which produce living

* Proc. A. A. A. S., 1873, p. 185.

† Proc. Phil. Acad. Sci., 1887, p. 121.