THE PALEOLITHIC STONE AGE IN INDIANA.

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When we say "Paleolithic" in Archeology the mind is almost sure to revert to the dim and mysterious past,—perhaps as far back as the so-called pale of human existence, and we would expect that any material facts connected with it would naturally be buried in an environment so indefinite and remote that one could scarcely grasp their meaning. Such instances have been found under conditions pointing back to very early times, even to the seemingly mythical Tertiary period, but in

Fig. 1. Tertiary Sea of North America.

most cases the statistics pertaining to them have been so indefinite that they have been questioned.

"Races of Man," a very thorough and unprejudiced study of the human race, states that finders of artificially chipped flints, said to have become buried in the later Tertiary stratas, have few supporters at the present day. This can be more fully realized when we consider that the close of the Tertiary period saw the passing of the monster animals of the previous age and the coming of others more suited to a comparatively temperate climate. Large portions of the earth's crust became submerged and the ocean extended up the Mississippi Valley to the Ohio River section. California and Alaska were under water; the great Tertiary Sea spread over the western plains and up to the Arctic Ocean (fig. 1); and the coral builders were yet at work upon Florida.

"Proc. 38th Meeting, 1922 (1923)."

Agassiz says: "The earth had already its seasons, its spring and summer, its autumn and winter, its seed-time and harvest, though neither sower nor reaper was there; the forests then, as now, dropped their thick carpet of leaves upon the ground in the autumn, and in many localities they remain where they originally fell, with a layer of soil between the successive layers of leaves—a leafy chronology, as it were, by which we read the passage of the years which divided these deposits from each other. Where the leaves have fallen singly on a clayey soil favorable for receiving such impressions, they have daguerreotyped themselves with the most wonderful accuracy; and the trees of the Tertiaries are as well known to us as are those of our own time."

Following this, from causes still imperfectly known, an accumulation of ice formed in the northern latitudes and glaciers extended into former tropical sections, and one glacier period succeeded another resulting in successive deposits also containing relics of former life and growths, and in this the Quaternary period, acknowledged evidence of the existence of man appears. "Races of Man," already quoted, states that: "In the quaternary beds the presence of human bones has beyond question been ascertained. The men of that period have handed down to us implements of a very rude type: fragments of flint of pointed form,—some were found along with the bones of animals which are now extinct; and objects of bone, horn, stag's horn and shell bear witness that Paleolithic man used tools or weapons made of other material than flint. A slow sinking of the land, which submerged beneath the ocean all the countries to the north and northeast of Europe, marks the end of the quaternary period; or from the archeological point of view, the 'earlier stone age' of the Paleolithic period. Of interglacial man, maker of those first flint implements exhumed from the lowest beds of the oldest quaternary alluvia, we have at the most, for the whole of Europe, but a dozen fragmentary skulls and a score of other bones genuinely quaternary. Of these the Neanderthal skull is typical of the early Paleolithic period, having an exceedingly low and retreating forehead, prominent brow ridges and probably a low stature." The same authority also states that: "The use of the bow was only known at a later period as arrow-heads of flint or bone have not been found in the early or Paleolithic period." And, further, that: "There is no people on earth which eats its food quite raw, without having subjected it to previous preparation, and no tribe exists, even at the bottom of the scale of civilization, which is not today acquainted with the use of fire, and as far back as we can go into prehistoric times we find material traces of the employment of fire, but real cooking, even of the simplest sort, is only possible with the existence of pottery, the manufacture of which must follow closely on the discovery of a method of obtaining fire, for no example is known of unbaked pottery."

To quote still further from the same source: "The Paleolithic period was succeeded by the present era in the geological sense of the word, which is characterized, from the archeological point of view, by another stage of civilization: that of the 'later stone age' or Neolithic period. In this latter period instead of the rude flint implements of the Paleolithic period, a variety of implements made their appearance."

Just how to differentiate between the Paleolithic and Neolithic cultures is a difficult problem. In the Paleolithic period man lived as an animal, procuring food from nature's supply which in certain climates is never exhausted, until his brain development suggested the first rude weapon and the first crude cooking utensil. A recent English publication,—"Man and His Past,"—gives a method quite unique in its way. The author, Mr. Crawford, says: "Man was the first animal to grow a limb outside of himself by making tools out of wood and stone. This was a great achievement, for with man the desire outstrips the performance. There is thus added a third factor, intermediate between man and his environment; so that the different kinds of interaction between the two are multiplied enormously. Man started his career in a comparatively defenseless state, with no limb or part of his body specialized as a weapon of defense or offence. That, perhaps, is why he alone picked up and used the flint around him. Moderate in all things, he lived a life of meditative aloofness in the forest, waiting for something to turn up. His patience was rewarded, for what turned up was not any kind of external goods but the key to all such—an intelligent mind.

"Now we are in a position to understand why it was that man, and man alone, has invented tools. The close connection between tools and brain becomes clear when we realize that primitive tools were the highest existing functions of brain made manifest. The power of intelligence grows with use, for it is quick to take a hint from its teacher, the tool. The tool is improved, fresh demands are made upon intelligence to use the new tool aright, and so the process is continued, each in turn helping the other. These tools may be regarded as art-products of a primitive kind, capable, therefore, of throwing light upon the nature of the men who made them, and so form the basis of all archeological work.

"The archeologist deals with the works of man in the past; it is through them that he is able to reconstruct a picture of the condition which obtained at any given period, and trace the evolution of culture."

The author, in connection with the above, teaches an object lesson by putting the matter in shape of a formula as follows:

(Animal) ——————————————— (Object)
(Man) — — — (Tool) ——————— (Object)

Applying the above to the principal matter in hand,—that of drawing a line between Paleolithic and Neolithic stages of aboriginal life, we can take the first portion of Crawford's formula, where there is a direct contact of animals with their environment, as representing in a general way the Neolithic age of man up to and including the use of the elementary tools. And the second portion of the formula would represent the progression in the new sphere of life as found in the various stages of advancement in the semi-civilized, aboriginal culture, known as Neolithic.

In an article entitled "Lonely Australia: The Unique Continent," H. E. Gregory says that Paleolithic man, whose primitive tools are eagerly sought in caves and gravels of Europe, was alive in Tasmania within the memory of people now living, and Neolithic man is roaming

the deserts of Australia by hundreds, some armed with a stone hatchet, a club, a short spear with hardwood point, or a long spear with stone point. What such a life would be like at the close of the Paleolithic period can be inferred by an experience of Miller and Furness among the "Village Veddahs" of Ceylon, as reported by a University of Pennsylvania bulletin a few years ago. They say: "We followed the jungle path along the eastern shore of the reservoir, dammed for the purpose of irrigating the Singhalese rice fields; this path led close to the big pads of yellow lotus, and through thick undergrowths, until we came to a cleared space where there was the merest excuse for a hut, and beside it a man and woman squatted side by side and were cooking something in a blackened earthen pot. They had between them scarcely a yard of coarse cloth for clothing. Although they had never before seen white people, nevertheless neither of them showed the slightest astonishment or interest in our appearance; both glanced up for a second, and then continued silently shelling the seeds out of the lotus pods beside them, and stirring the simmering pot over the fire. The most impressive thing about them was their inhuman apathy and lack of interest, a peculiarity of the lowest type of man. The iris of the eye seems to merge indistinctly into the white, and the Singhalese say that the Veddahs have eyes like monkeys, because they are red, and they always look down or stare straight before them; this seems to be true as at such times their faces are utterly expressionless. Near them were five other shelters or huts, about eight feet square, with scant walls and dirt floors. The women and children were occupied in shelling the seeds out of the lotus pods and the chief when asked by our guide if there were special times during the day when they ate replied: They crack one nut and eat it, then crack another and eat it, until their supply is gone, and they sleep wherever they happen to be. Although they live near the lakes, abounding in fish, they are not fishermen, as far as we could learn."

This, then, is the childlike stage in man's development, and the question comes,—Was there such a period in the existence of man in America? If primitive man here was autochthonous then as a matter of course there was such a beginning. Agassiz and Dana have stated again and again that North America was the original home of man and the oldest area known. Prominent authorities have even suggested that the tide of emigration may have set the other way—from America to Asia.

Belief in the emigration plan of peopling the so-called new-world from a "dispersal center" in Asia still obtains. The Smithsonian Institution in their Handbook of American Indians says: "The fact that the American Indians have acquired such marked physical characteristics as to be regarded as a separate race of very considerable homogenity, from Alaska to Patagonia, is regarded as indicating a long and complete separation from their parental peoples." And it is further stated: "The term Paleolithic is applied to implements, usually of stone, belonging to the Paleolithic age as first defined in Europe and afterward identified in other countries. In America the Paleolithic, as chronologically distinct from the Neolithic age, is not established, and the more

primitive forms of implements, corresponding in general to the Paleolithic implements of Europe, can be properly referred to only as of Paleolithic type."

The latest from the Smithsonian Institution on this subject is by Holmes in "Aboriginal American Antiquities," as follows: "Old world cultures have come to be known as the Early Stone, the Late Stone and the Bronze ages. In America, classification of artifacts on the basis of culture steps is not attempted. Our aboriginal history as a whole lies entirely within the so-called age of stone. A discussion of the Stone Age is a comprehensive study of the whole subject matter of the aboriginal peoples and their culture." He says further: "The purpose of the archeologist is not merely to classify and describe antiquities but to make available an intimate knowledge of all the phenomena of aboriginal culture and apply it to the elucidation of the American race and to the history of the human race as a whole." But, in order perhaps to en-

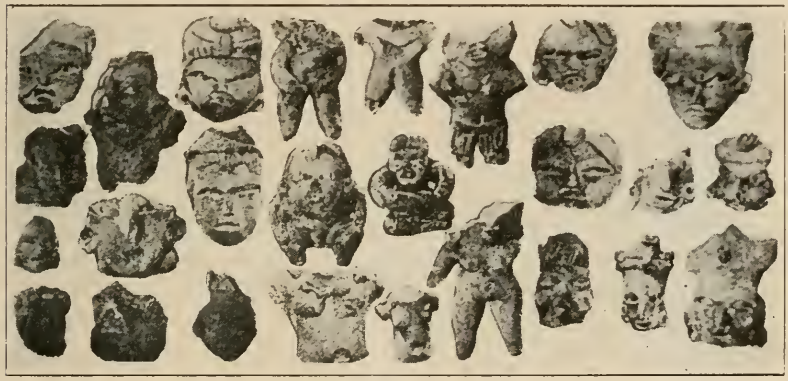

Fig. 2. Clay figures taken from below an old lava flow near the Mexican volcano Xitli. Estimated age, 7,000 years.

courage classification of artifacts on a cultural basis, he also states: "It is the privilege of the archeologist to adopt such classification and take such points of view as he believes will best serve his particular purpose, the broader purpose being to place the whole body of the subject matter on record in the manner best suited to the needs of the anthropologist-historian, who in due course may expect to have at his command data sufficiently complete to enable him to give to the world a well-rounded story of the American race."

This permit comes very timely, for recently in Mexico some authentic geological and archeological explorations have, as they report, found data which calls for a "face about in archeology and history." It seems that a quarry had been opened up in an ancient flow of basaltic lava, and in the earth stratas below were found the remains of aboriginal life belonging to a very ancient culture. The age of the lava flow is established geologically at 5,000 years, and the indicated age of life previous to the eruption of the volcano Xitli is 2,000 years; making the

remains found at the lowest depth of the most primitive culture about 7,000 years old. These remains consist mostly of pottery, clay heads and figurines. The clay vessels are semi-globular, without much appearance of a neck, as though they were copies of holes in the ground, such as would be used in moulding the crude clay pots. The clay figures (fig. 2) of the lowest deposit are crude and grotesque beyond description.

The report states that they do not consider them to have been autochthonous, but that they arrived in Mexico probably by a northern route in the closing phases of the glacial epoch. Not considering them to have been native to the soil, and consequently not Paleolithic in the usual classification of peoples of that age of the world, they have selected a new appellation, calling them by the improvised name of To-achtopay-atlaca, meaning "our primitive people." This brings us back to a realization of a possible Paleolithic race in America, as ancient as any indicated in the Old World. Another interesting matter in the way of collecting archeological information is mentioned as follows: "Unfortunately although work has been carried on at the San Juan Teotihuacan pyramid for so long a period as 15 years, and a museum erected, it is reluctantly admitted that the material there is not arranged in scientific order, hardly any of the specimens having the place marked from which they were derived." This calls attention to the failure of noted specimens in the past to receive credit when they were apparently Paleolithic, but which were carelessly removed from their environment without data sufficiently accurate to permit a positive conclusion. A recent interesting find illustrates the case as follows: In a rock shelter, known locally as Jacob's Cavern, situated in the Ozark mountains in Missouri, there were found in April of last year (1921) a number of decorated bones, perforated as if used for a necklace. This cavern had previously furnished valuable specimens of aboriginal life when excavations were made for the Phillips Academy Museum some 20 years ago, and was a favorite resort for those who cared to dig for Indian relics. Mr. Taylor, the owner of the land and finder of the specimens in question, had from time to time dug further and further back, attempting to reach the extremity of the overhang. Stalagmites had formed in places and one of these had been shattered by a charge of dynamite without the owner's knowledge. In company with a friend Mr. Taylor happened to dig at the location of this stalagmite and unearthed nine specimens of perforated bone and shell. They were rudely ornamented with incised lines, one design having an outline suggesting the elephant (fig. 3) and two suggesting the deer. On exposure to the air the smaller bones soon crumbled and the larger ones were saved only by encasing in paraffin. Dr. Clark Wisler, of the American Museum, was asked to visit the premises, which he did in August, 1921. The results of his visit are given in a memorandum to Mr. Taylor as follows:

"The opportunity afforded me by your hospitality to examine the carved bone found by you and the privilege of exploring further in the cave, in the company of Mr. Randolph, Dr. Vernon C. Allison, and yourself, is greatly appreciated. Jacob's Cavern has long been known to us through the report of Peabody and Moorehead and has frequently been

cited as one of the possible type stations for early man in America. It is, therefore, of unusual interest to know that this site is by no means exhausted, but still rich in data. The question your find raises is whether the person who made the sketch on the bone which has been preserved saw a mastodon or mammoth. This cannot be answered positively, but the probabilities of the case can be estimated. In the first place, the work is of the primitive stamp and such as we might expect from the hand of an American native. It so happens that upon these bones at least three attempts were made to represent living forms, apparently by the same artist. Two of these forms have the distinctive lines of elk and deer, while the lines of the third characterize elephant kind. This favors the interpretation that an elephant, mastodon, or mammoth was intended. At once the objection will be raised that the bone is recent. Though the mastodon and the mammoth are characteristic of Pleistocene time, it is not known when they became extinct; for all that is known to the contrary, these great mammals may have

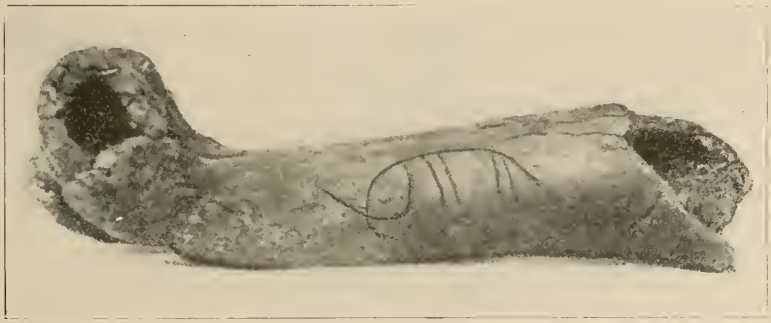

Fig. 3. Carved bone from Jacob's Cavern. Note carving representing a mastodon type of mammal.

held out to within three thousand years ago. Thus, the artist could have seen one of these animals and still have lived under modern conditions. No one in authority seems now prepared to deny that man was in America three thousand years ago. In other words, there is nothing zoölogical that makes your interpretation improbable. We must, therefore, turn to the cavern itself. It appears that this bone was found in the present surface of the cave, but approximately five feet of deposit were taken out by Moorehead in 1903; hence this bone is older than anything found by him. When we recall that both Peabody and Moorehead were impressed with the great age of what they removed, the evidence is again favorable to your interpretation. Also, there are still in the cavern almost five feet of deposit, in the main clay, through which you were so kind as to sink a shaft in my presence. This excavation indicated the presence of man's handiwork in all parts of this deposit, one piece of worked stone being found at the bottom of the shaft, lying flat upon the original stone floor of the cavern. One must conclude, therefore, that there are remains in the cavern that are of

greater age than the bone in question. In general, then, I regard this site as one of the most important yet discovered and one demanding further investigation. Regardless of what may ultimately prove to be the significance of this carved bone, you have made a discovery of great promise. I assure you of my appreciation of your confidence, in extending an invitation to make further excavations in this deposit and its surroundings. So, pending the examination of the site, as indicated above, no further comments seem necessary. The writer will do everything he can to further this investigation to the end that the complete story of Jacob's Cavern may be revealed. It is to be hoped that at last we are on the trail of early man in America."

Smithsonian bulletins have this to say on the subject in general: "Caves and rock shelters representing various periods and offering dwelling places to the tribes that have come and gone, may reasonably be expected to contain traces of the peoples of all periods of occupancy. Vast areas of limestone rocks of varying age occur in which are countless caves, the great caverns of Kentucky, Indiana, Virginia and Missouri being well known examples. It is observed that in general these caverns have existed for a long period, extending back well beyond the time when man is assumed to have appeared on the continent; but the deposits forming their floors, with few exceptions, have not been fully examined and up to the present time have furnished no very tangible evidence of the presence of man."

These meager results may possibly be accounted for by the fact that rare antiques have been and are expected as a reward for digging, delving and exploring. What an explorer should hope to find, if he is skilled, is something which will enable him to date and explain the site he is excavating, or the period to which it belongs. Regarded in that way, the intrinsic value and beauty of the objects found is irrelevant. This idea of archeological research applies forcibly to the work of determining the beginnings of aboriginal man in America, for the proofs are rare and Nature has buried them deep. Mexico has its volcanic lava flows which have preserved the records in stone; and other sections have lake dwellings with shell heaps in which traces of early man lie buried; but here in mid-continent the mounds and caverns must be looked to for ancient and unwritten information. Ohio has obtained a most enviable history in its mounds and earth embankments, but this is mainly in the way of remarkable achievements by the later cultures of that prehistoric Indian race. In no section probably is there a better field for research than in Indiana, for there is hardly a county in southern Indiana but what can show caves or rock shelters, and in some they are very numerous. It would not necessarily be a large cave that would be most desirable for habitation, and the Indiana Historical Commission in its work of developing a State Archeological and Historical Survey will probably be able to locate those which show signs of having been in such use.

Scattered over the length and breadth of the land in almost all directions are the innumerable conical mounds which vary in size and apparent use, some being of a sepulchral nature while others bear traces

of religious rites in which fire was made use of, and others bearing no trace of their real use. In the sepulchral mounds the objects buried with their various owners indicate the predominant traits of character of that people, being mostly the stone weapons for self-defense and the slate gorgets or charms of supposedly supernatural power. Of the weapons, most are of a flint nature, breaking with a splintery fracture and chipping to a sharp edge with a conchoidal fracture. The very first weapon, that of a spear head (fig. 4), is taken to be the first stone implement fashioned by man, and was done in a crude way,—simply a pointed stone of a shape which could be fastened to a shaft to form a

Fig. 4. Rude flint spearhead, Paleolithic type. Original.

spear. This marked his entry into the realm of investigation and art craft, and is taken to mark the latest phase of Paleolithic life. Following this came the multitude of artifacts marking the stages in Neolithic culture.

The spear or lance came early to hold a prominent place on ceremonial occasions, being suited for prominent display in processions and dances. Flint from which the spearhead was formed appears most abundantly in Ohio, Illinois and Indiana, and large aboriginal quarries were worked in the two former states. Kaolin, a clay desirable for pottery, also abounds in this territory, so that two things most conducive to growth in the earliest period were present, and the multitude

of mounds and earthworks are evidence of the presence of a third dominant feature, religious ceremony.

A large proportion of the conical mounds show no implements interred and no traces of burial, but the latter can be accounted for if an age of construction which could easily run into the thousands of years is conceded, in which time every vestige of bone even would have disappeared. The immense earth embankments at Fort Ancient in Ohio are conceded to belong to the earliest stage of aboriginal life which left visible traces of this kind behind them. Indiana shares with Ohio the landmarks so laboriously erected by this unknown race, for they lie on the outskirts of the territory marked by earth embankments of circular, square, elliptical and irregular outline which extends west along the southerly side of the great lakes into Indiana. Smithsonian bulletins say of them: "The Mound-builders seem to have skirted the southern border of Lake Erie and spread themselves, in diminished numbers, along the territory south of Lake Ontario, and penetrated into the state of New York as far as Onondaga where some slight vestiges of their work were found. These seem to have been their limits to the north-east. They extended in the same manner westward into Iowa and Nebraska, but no record is had of their occurrence above the great lakes. They are distinguished for their regularity, most of them being circular or square in form, and are found isolated and also in groups. They are mostly of a diameter of 250 to 300 feet and almost invariably have the ditch interior to the wall, and always have a single gateway. The enclosure was sacred and set apart as 'tabooed' or sacred ground."

In Wisconsin a wonderful profusion of earth embankments prevail and are radically different from those forming the chain along the territory south of the great lakes. They are mainly of two general outlines,—straight, linear embankments and those of animal and bird outlines, all of which are interspersed with conical mounds. The peculiar features of linear mounds are that while on an average of two or three feet in height, they begin with an increased height at one end and taper in width and height to almost a point at the other end; and, further, that in some cases they begin on a level plateau with the high portion and extend down the adjoining slope decreasing in size almost to a point. This latter feature is also found in some cases of irregularly shaped mounds and effigy outlines. The mounds are seldom over eight feet in height and the earth embankments are frequently only about two feet in height and often merely a trace. While the circular earth embankments of the great lakes region, as a whole, indicate an almost exclusive ceremonial use, those in Wisconsin go farther by representing living forms and probably were endowed with mythical life, and we are again reminded of the fact that the Indian was an "animist", to whom every animal and object in nature contained a spirit to be propitiated or appeased. Another feature peculiar to Wisconsin is the matter of so-called "Garden-beds." They are located in valleys and cover acres of ground in the form of ridges three to five feet apart, with a furrow between. They are parallel and are mostly straight but in some cases are broken by sections having parallel curved ridges or irregular

outlines similar to a turtle back. As a whole they resemble very closely the designs on pottery, particularly those reported from the Cahokia group of mounds in Illinois, across the Mississippi river from St. Louis. There may have been a relationship between these people who lived in the same river valley and made use of similar designs. The emblems on the pottery are understood to have had a mythical meaning, and these ridges are apparently of a ceremonial nature.

Referring again to the earth embankments in Indiana which form a part of the chain of earthworks stretching along the south side of the great lakes, the group at Anderson was described in the Geological report of Indiana for the year of 1878; and again in 1892 by F. A. Walker of Anderson, who read a paper at the annual meeting of the Indiana Academy of Science of that year, which was published in the Academy Proceedings, but without a copy of the photographs which

Fig. 5. Portion of circular embankment in Mounds Park at Anderson, Indiana. Photograph made by Mr. F. A. Walker in 1892. Original.

had been made. He had a survey made and described the group as consisting of seven structures of circular and oblong outline, the largest one being 360 feet in diameter, 1,131 feet in circumference, covering two and one-third acres. The maximum height of embankment is given as over 9 feet and accompanied by an interior ditch of about 12 feet maximum depth, and having an opening or gateway of 30 feet between ends of embankment. Mr. Walker took great pains to secure photographs of this embankment (fig. 5), and we take pleasure, after a thirty years interval, of seeing them again presented.

Another embankment, second in importance in Indiana, is at Strawtown in Hamilton county, northeast of Noblesville. We say second in importance, for while it is a single embankment instead of one of a group, yet at the same time is one of the noted exceptions in the way of construction, being one of the few having the ditch outside of the

embankment. It was reported in the Geological report of Indiana for the year of 1875 as being 280 feet interior diameter, the ditch being 30 feet in width and about 9 feet deep.

A third embankment is of a rectangular shape and located at Winchester in Randolph county, a portion of which was formerly within the county fair grounds. In the Geological Report of Indiana for the year 1878 it was reported as containing about 31 acres, the interior area being about one fourth mile in length and over a thousand feet in width. The embankment was 6 to 8 feet high with a gateway at each end, one of which had an elaborate entrance in the form of a crescent. It is remarkable as to outline and for having no ditch accompanying the embankment; also in having two gateways, inasmuch as Smithsonian descriptions say these single earthworks invariably have but one gateway.

Indiana is most fortunate in having these three groups or instances of aboriginal earthworks which may prove to be primeval. They are specially interesting as they represent three different types of construction and commemorate a remarkable race of primitive times and one with a personality which American history will be proud to record.

Of the use to which these earthworks were put, Smithsonian conclusions are as follows:

"On the whole, the American Indians incline strongly towards all forms of religious excitement. Their festivals and games were accompanied by religious rites, some being confined to groups and others participated in by whole tribes. Specially prepared lodges or grounds were tabooed, into which none but the initiated could enter, and which were indicated in such a manner that the public might not mistake it. The ceremonies formed intrinsic features and may be regarded as phases of culture, their special character depending on the state of culture of the people by which they were performed; hence there are at least as many kinds of ceremonies as there are phases of culture in North America."

As to segregating the phases of culture and working out a sequence, which has probably been awaiting the completion of sufficient exploration, it would seem practicable to draw the same line in the stone age that is done in Europe, viz. the early or primitive stage as separate from the later or perfected stage. As flint may be taken as emblematic of the early period, being the material so easily fractured into the form of a spearhead, so may we select the stone of hard and tough texture, such an granite, syenite, diorite, basalt, etc., as typifying the late period in the stone age. This tough, grained rock was subject to abrasive treatment in the way of hammering, pecking and rubbing to give a desired outline and cutting edge. The first implement in this line to be worked out has been considered to be the hatchet shaped implement known as the "celt" (fig. 6) which appears in about the same form in the stone age of European countries. It required long and patient work to give it the required outline, and then the cutting edge was formed by a rubbing or polishing process, and this polishing in some cases was applied to the entire surface of the implement.

Fig. 6. Celt of smoothed stone. Neolithic type. Original.

The line between the two stages of aboriginal life in the stone age, known as the early and late, is well drawn by the Encyclopedia Americana, 1920 edition, as follows:

"The art of polishing stone implements was introduced near the beginning of the Neolithic period. It is on this basis,—the absence of polished stone implements in the deposits of the Old Stone Age and their presence in those of the young Stone age,—that the names Paleolithic and Neolithic are given."