

CHAPTER XI

CHIPPED STONE ARTIFACTS

Stone artifacts, for the purpose of this discussion, will be considered under the two usual major divisions, i. e., (1) chipped implements and (2) ground implements, and in this chapter those artifacts made by the chipping, breaking, or cleavage of stone, will be briefly discussed. We are using the term "implement" in its broadest sense to include tools for known purposes, ornaments of known use, and problematical or ceremonial forms, the use of which is either wholly unknown or admittedly quite uncertain.

The chipped stone artifacts commonly found in Kentucky may be roughly classified as follows:

- | | |
|-----------------------|------------------|
| a. Flint blanks | g. Hoes |
| b. Knives | h. Scrapers |
| c. Spearheads | i. Celts |
| d. Arrowpoints | j. Disks |
| e. Drills | k. Hammer-stones |
| f. Harpoons and hooks | |

This classification does not, of course, include all artifacts of this type which are known to have been used by prehistoric man here and elsewhere but lists merely those which we have found most commonly in this state. Exceedingly rare and unusual specimens have been omitted from this classification and will be discussed in a later chapter on miscellaneous artifacts.

The manufacture of chipped implements by primitive man is inseparably connected with the process of quarrying the material from which the implements were made. Investigation has shown that quarrying with very primitive tools was carried on quite extensively in certain areas in Ohio, Tennessee, Virginia, and elsewhere, and that the products of these quarry operations, were carried hundreds of miles from these quarries, before being reduced to finished form. While there are numerous quarry sites on this continent which were used extensively, in general they are all of one or the other of two types. In one, primitive man obtained pebbles and boulders of quartz, quartzite and other similar material, either from present river gravel beds, or

from conglomerate strata containing such pebbles, laid down in geological ages past.

The operation of quarrying was comparatively simple, consisting in the main of gathering such bowlders, on the surface when exposed, or digging for them in the earth. In some cases primitive man attacked the strata containing the pebbles, and excavated the softer strata to obtain them. However, investigation shows he made use largely of pebbles which weathered out and fell as talus at the foot of cliffs. Many such quarries have been investigated, and those reported by Holmes in the Potomac-Chesapeake tide water region of Maryland are very typical.

After obtaining quantities of bowlder of the desired material, and proper size, these were assembled at one place, and by striking with a similar stone used as a hammer, flakes were broken off, reducing the bowlder to a so-called "turtle-back." That is the flakes breaking off usually with a conchoidal fracture, were removed by striking the bowlder at points all the way around, its circumference, leaving one-half of the original surface of the bowlder on one side. If desired, flakes could then be broken off so as to cover the other side of the bowlder, and reduce it to a "blank"—that is the blank was now rough but fairly thin, and capable of being further worked to the desired form by further percussion, or by pressure.

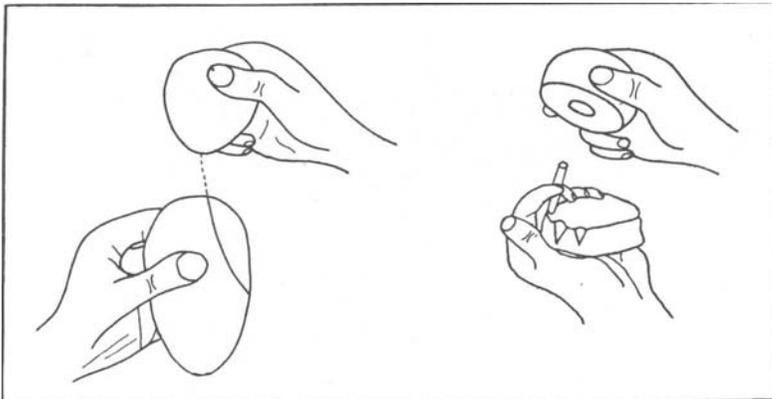


FIG. 106. METHODS OF CHIPPING FLINT.

The figure on the left illustrates flaking by direct percussion; that on the right the method of flaking by indirect percussion.

This process of rough flaking to form blanks was accomplished near the actual quarry site, and sometimes within it, probably to save the labor of transporting useless material. Boulders which did not break properly, and all material spoiled by the lack of skill of the artisan, together with flakes broken off were left on the site as rejects. This partially worked material has accumulated in vast quantities in these quarry areas, and such accumulations have been spoken of as "quarry shops." The products of such shops were rough blanks suitable for transportation to long distances before being finally finished. The two left hand specimens in figure 108 represent such blanks.

The other type of ancient quarry for obtaining material for chipping, is well represented by the great Flint-Ridge Quarry of Ohio, investigated by Mills. Here primitive man attacked natural deposits of flint in strata a foot or more thick. The quarry operation consisted in exposing a portion of the strata by digging a pit. A fire was built and when the strata had been heated, water was thrown on the hot exposed flint, causing it to crack and splinter. This process was continual till a hole was worked in the deposit, and the face of the flint ledge was exposed. Then by the use of crude tools as picks, the softer material under the exposed flint ledge was dug out and removed, leaving the flint uninjured by fire, not only exposed, but actually overhanging. By the use of large hammerstones, some about the limit of a man's ability to lift, portions of suitable size were broken from the ledge. These portions were removed only a short distance from the quarry to the "shop" where they were worked into blanks of suitable size for transportation. Again such shops are marked by a great accumulation of flint chips and by rejects.

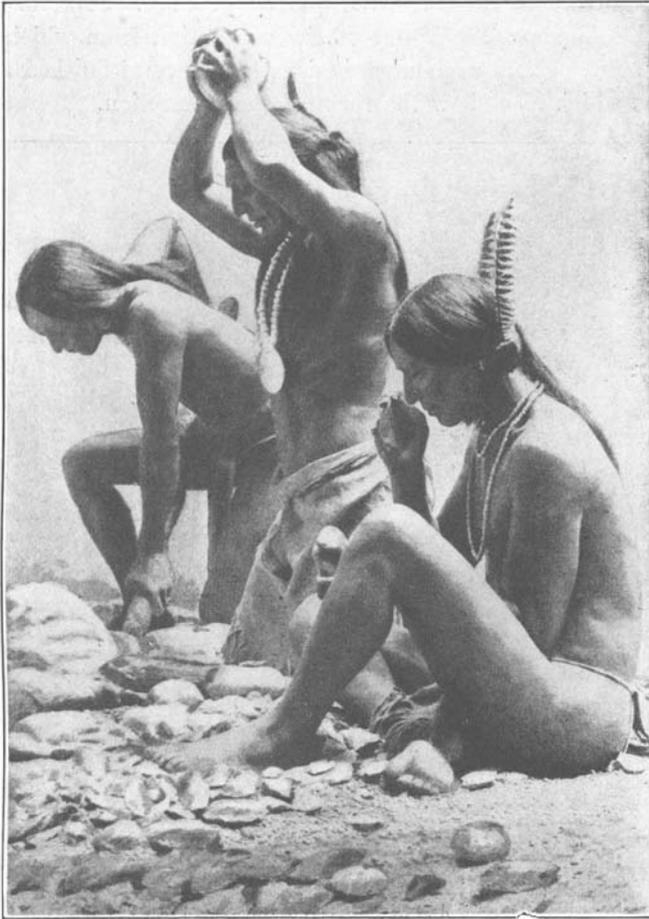
The flint blanks from such quarries, as well as quartzite and quartz blanks from boulders became an article of trade among the different tribes, and such supplies were transported long distances. Often great quantities of such blanks have been found in a single cache, which seems to indicate that they represent wealth, the result of labor, trade, or travel, and when procured in quantity were stored as against a future need.

While many caches of flint discs or blanks have been found, the largest was reported by Moorehead as taken from Mound No. 22 of the Hopewell Group, of Ross County, Ohio. From this mound, Moorehead reports 7,350 discs taken at one time (1891). Previous removals by early explorers, in 1845, in this same mound would seem to indicate the total number to have been not far from 8,500. Of the cache Mr. Moorehead has to say:

"These discs represent a storage of raw material. The discs were not placed in that mound as an offering. There were no burials and no altars. Many years later I discovered the quarries on Little River, Tennessee, 18 miles south of Hopkinsville, Kentucky, whence I am persuaded this flint was obtained. It was of the nodular variety, gray-blue in character, and could be, easily worked. The quarry showed signs of extensive working. After a thorough investigation I concluded that the ancient people had quarried this flint, worked it down to convenient disc form for distribution, and taking it in canoes down the Little River to the Cumberland, down the Cumberland to the Ohio, up the Ohio to the Scioto, and thence to North Fork of Paint Creek, landed it one-half mile from the Hopewell village. The distance by water would be 700 or 800 miles, as near as I can judge. If the material was not brought in this manner, it must have been obtained by trade, and one can scarcely conceive of over eight thousand discs weighing from $\frac{1}{4}$ to $\frac{2}{3}$ of a pound, each being carried overland on the backs of Indians from Northwest Tennessee to Central Ohio."

This quotation illustrates the fact that while there are no extensive quarries known to have been used by primitive man in Kentucky that will compare to the Little River quarries of Tennessee, Flint Ridge of Ohio, or the Tidewater quarry of Maryland, yet the traffic in flint discs, as raw material, did undoubtedly take place in Kentucky as elsewhere. In the Kentucky caves, there is an abundant supply of bedded flint deposited in strata quite sufficient in size to have been worked. There is also to be found over a considerable area in southern and western Kentucky, the outcrop of limestone strata containing concretionary flint.

These concretions, being much harder than the remainder of the limestone strata, are released by weathering, and are to be found in great quantities on the surface where such strata outcrop. Such concretionary flint breaks with the typical conchoidal fracture, a characteristic of the vast majority of flint artifacts in Kentucky. Again, the concretions being formed in layers about the center, the successive layers are often of different color. Such circular "eye spots" shown by flint blanks as



FROM 15TH REPORT. BUREAU OF ETHNOLOGY

FIG. 107. AN ABORIGINAL QUARRY WORKSHOP.

A group designed by W. H. Holmes for the Columbian Exposition.

well as artifacts definitely prove the source from which they come.

The method of quarrying boulders of quartzite, fracturing by hammerstones, and reducing the quarry product to "blanks" suitable for later specialization, is well illustrated in figure 107, which is a plaster group prepared by William H. Holmes for the World's Columbian Exposition at Chicago. The figure is copied from the 15th Annual Report, Bureau of Ethnology.

Figure 108 illustrates the quarry product. Some of these flint blocks show the center of the concretion from which they were split. There are shown beside them several finished arrow points which also show the form of the concretion.

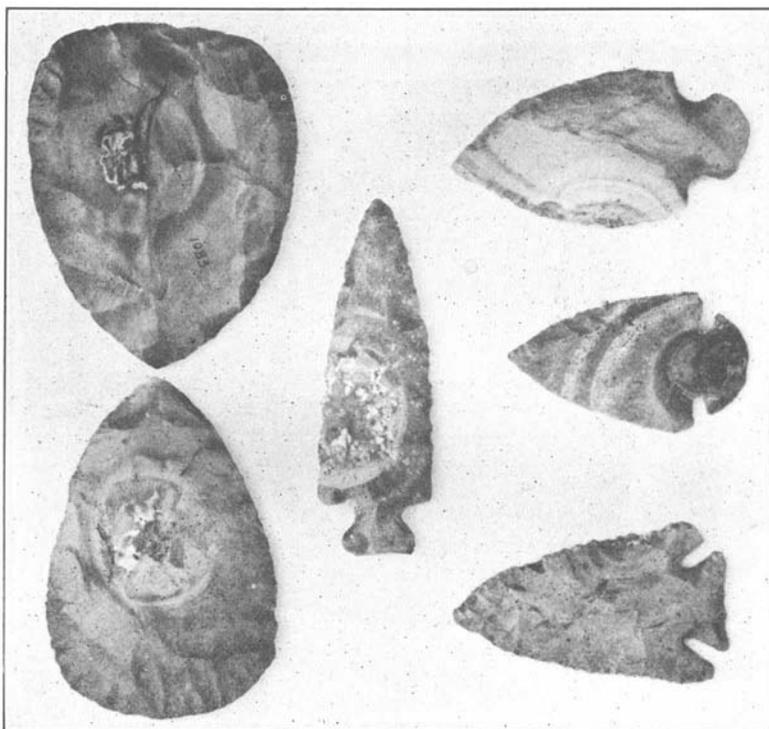


FIG. 108. QUARRY BLANKS AND ARROWPOINTS.
Rough blanks and finished points made from flint concretions.

The manner of working these blocks into specialized form has been mentioned in the chapter on bone artifacts. The principal tool used in this last stage of manufacture was a "bone flaker." This flaker was about 3 to 4 inches long of very hard, compact bone, free of grease. When in use it was grasped in the right hand, the flint block being held in the left, the hand being covered with leather to prevent cutting by the flint chips. (See Fig. 109.) The flaker was placed against the edge of the flint blank and upon pressure being brought to bear with the right hand flakes were dislodged. This art of finishing the

knife, arrow point, or spear head, by delicate flaking by removing very small regular chips, reached a very high state of perfection in Kentucky. Many specimens of the highest art in flint are found in our state.

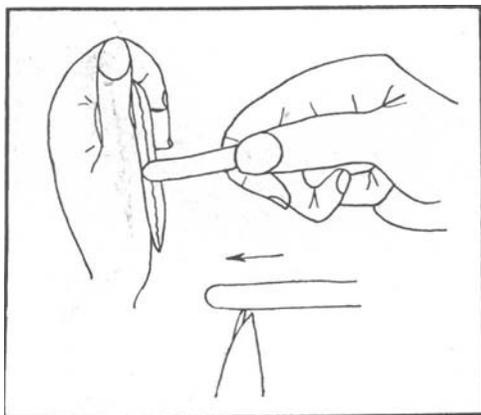


FIG. 109. CHIPPING FLINT.
Method of using the "bone-flaker."

Probably the simplest article of manufacture from the quarry blank was the flint knife. In fact, almost any flint chip was sharp enough to cut leather or even bone or horn. Many knives were placed in handles, as their outline shows. These were of the long slender variety. There were, however, many knives made from beautiful blanks 6 to 8 inches long and even longer, which were certainly used without handles, and must have been very efficient tools in the removing the skin from a deer or bear, but were certainly much too blunt to be an efficient weapon.

Fig. 110 shows a group of such knives, the form usually hafted.

Among the most beautiful flint artifacts are the so-called spear heads. These vary in length from 3.5 inches to as long as 10 inches or even longer. It is not certainly known that ancient man made use of spears in the true sense. Doubt has been expressed by some that early man in Kentucky ever used spears and by some these artifacts are thought to have been

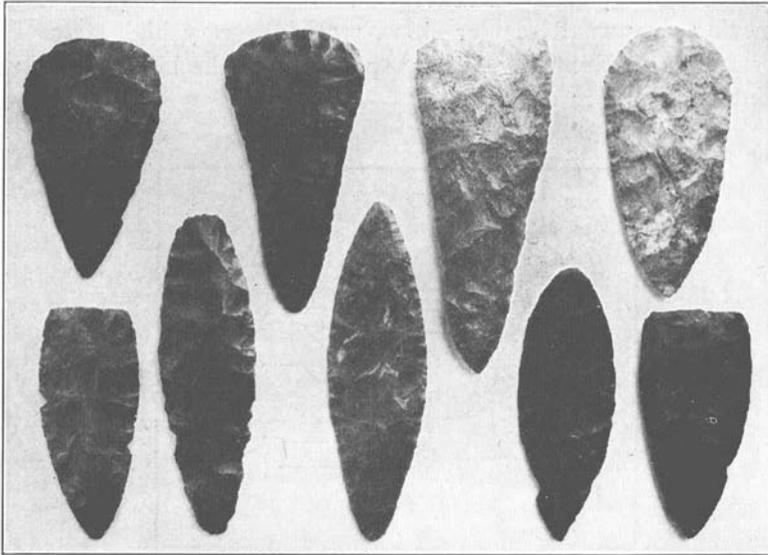


FIG. 110. FLINT KNIVES.

This form of knife is believed to have been used with a handle.

knives. In most cases they were notched for "hafting" and with a convenient handle would have been a very efficient weapon. By some, these "spear points" are thought to have been used largely as emblems of authority, carried on a long shaft, to be stuck up in the ground outside of the lodge, to indicate the rank of the occupant, and in time of battle to be carried as a standard about which the followers of a chieftain would rally.

In many instances, the "spearpoint" has exactly the distinctive characteristics of certain type of arrow point, found in the same locality. This fact would seem to indicate that they were expected to be used for similar purposes. It is well established that the historic tribes, especially the western tribes, not only used the spear as a symbol of authority, but used it as a ready weapon of offense and defense. Especially was this true of the historic Indians living on the plains, and accustomed to the use of the horse. The finding of so many spear points in good condition, many of them showing a very high order of ability in working flint would seem to argue that early man actually used these large flint blades as the points of true spears.

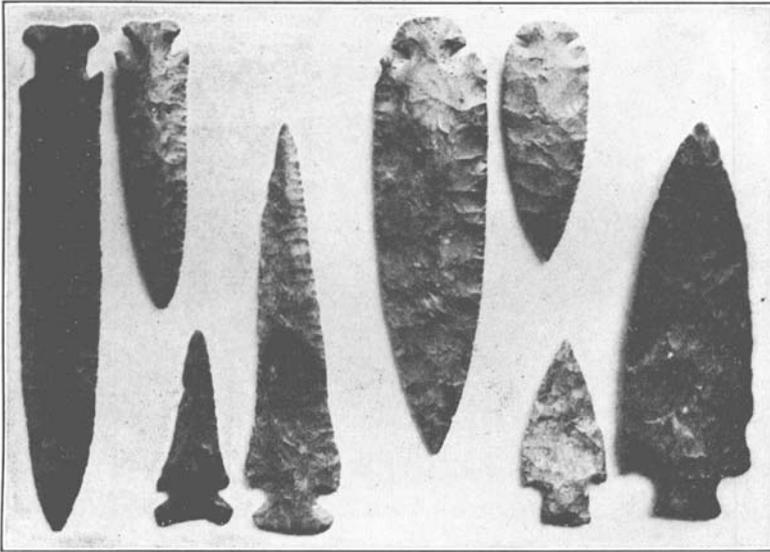


FIG. 111. SPEARPOINTS.

The one on the extreme left is $7\frac{3}{4}$ inches long. The arrows in the photograph show the same type of notching and are believed to represent the same design.

Figure 111 shows a number of these large spearpoints. A number of these have been shown for comparison by the side of an arrowpoint of the same form, and believed to have been used by the same people.

To the uninitiated an arrowpoint is an arrowpoint, but to one who is willing to study their form, and collect data as to their association and distribution it is a source of never ending delight to become aware that certain types are standardized as to manufacture and that their occurrence is limited to certain areas, and certain definite associations. After having inspected and compared thousands of arrow points from the State of Kentucky as to size, material and distribution, it seems reasonable to assume that every tribe had one or two, or at most only a few types, recognized by them as standard for a definite purpose. These forms would naturally occur in this tribe in vastly greater numbers than those which might be equally good, but which were the result of some individual design of some arrow maker

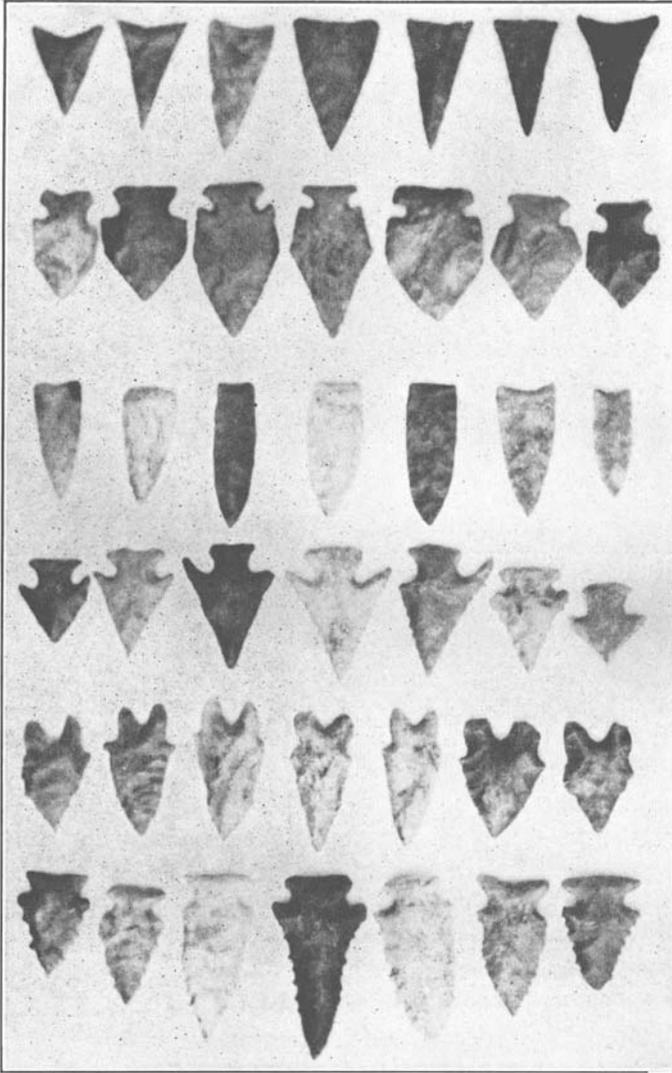


FIG. 112. ARROWPOINTS.
Representative types common to Kentucky.

or the peculiar desire or design of some individual hunter or warrior.

Certain it is that if one gathers a thousand arrows from any restricted area in Kentucky, such as a single county or group of

adjoining counties, and begins to sort out the arrow points that are alike in some distinct characteristic, he will be struck with two outstanding facts: First, that about 85% or more of all the points will fall easily into some 4, 5 or 6, or more groups, (see Figs. 112-113) with considerable varieties of the number in each group. And second, that the remaining 15% seem to defy classification. This 15% remnant often contains the most beautiful individual specimens, showing the highest degree of workmanship, and while probably no two are exactly alike, one form may by gradual graduation pass into another very different form by steps so small that it is difficult if not impossible to say to which form the intermediate specimens belong.

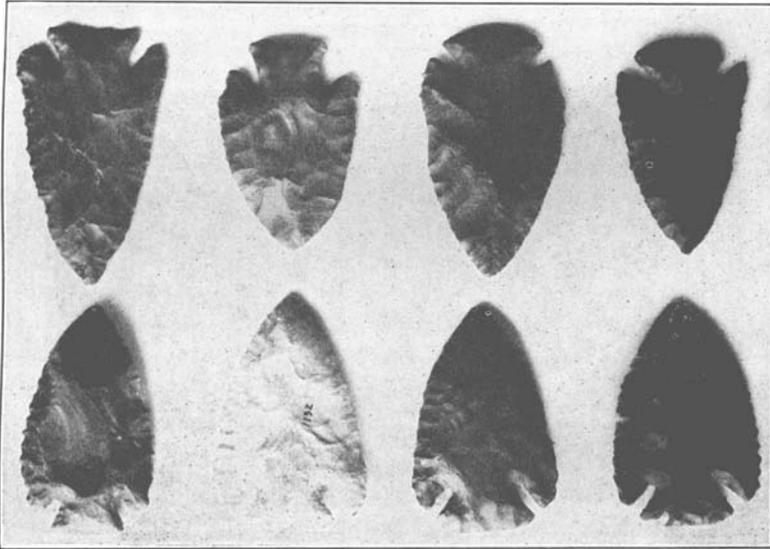


FIG. 113. ARROWPOINTS.
Large flat types showing excellent workmanship.

This experiment has been tried many times upon coming into possession of a large number of arrowpoints from a given area, and the conclusion is ventured that, for certain tribes, races, or cultures, there was one or perhaps at most a very few standardized forms, each perhaps for a definite purpose. Points of one of these standard forms, are exactly alike as to size, shape,

distinguishing characteristics, and generally as to material. In such investigations it is quite easy to observe that certain type forms have a wide distribution and form about the same per cent of the whole number, in one county as in another county, perhaps two hundred miles away, (see Fig. 114) while other distinctive type forms appearing as a large percent of the whole in a restricted area will disappear or be a negligible percentage

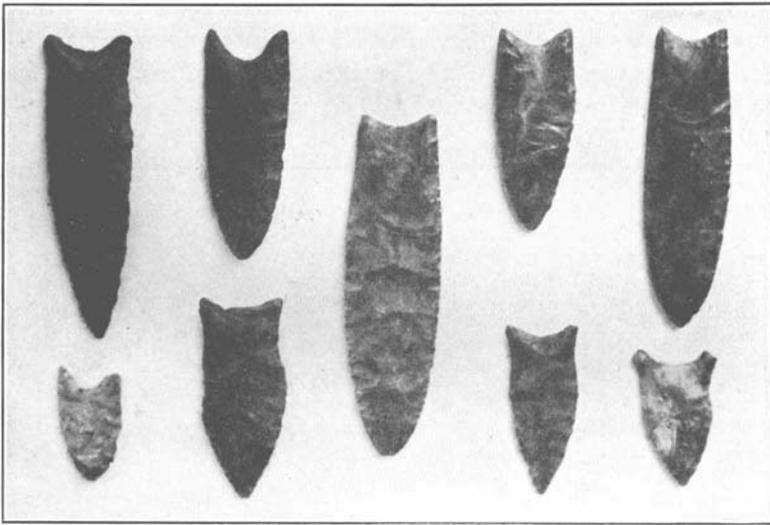


FIG. 114. ARROWPOINTS.

A type which is quite rare but which has a wide distribution, being found scattered over all of central and western Kentucky.

in an adjoining county. It is believed that the plates of arrowpoints presented will demonstrate this point. If this be true, we have a basis, however an uncertain one, for distinguishing between those types of arrowpoints which seem standard over a large area, and must have found wide usage throughout an extensive Culture from those types which were perhaps tribal rather than cultural, and which found only local usage by a smaller group. We have another form characteristic of Hardin County, Kentucky, while it is believed that standardization was natural and was actually taking place, yet on the other hand it had not eliminated individual specialization as suggested.

It has been suggested by other writers on the subject that the apparent similarity in form of a large portion of the arrowpoints found in anyone locality was to be attributed to the skill of perhaps an individual workman, or a group of workmen whose technique distinguishes the artifacts rather than a difference in tribal or racial ability. This idea has been expressed by Moorehead in his "Stone Age of North America" as follows:

"Little attention has been paid by archaeologists to ascertain an important feature of prehistoric times. I refer to the presence in most of the tribes of skilled workmen whose speciality seems to have been the manufacture of certain kinds of implements. That some men were more skillful in the making of axes or pipes, and handled bone chipping-tools with more dexterity than others, goes without saying. If one were asked to state what proportion of men were skillful in the art of stone-working, no one could give a definite answer; but the searcher finds in limited areas a particular style of flint-chipping, or a local form of axe or pipe. These appear to have been made in the same manner, perhaps with tools of the same pattern. The guiding hand of the master-workman is seen. Each one is stamped with individuality, therefore one may conclude that either a certain person made these objects, or perhaps the men of a given family made them.

"Supposing that a young man who showed proficiency in flint-chipping should at the age of twenty become so skillful that his works were in demand. It would follow that if he were given the ordinary span of life, his period of proficiency would extend for forty years. If he retained his health and faculties, his activity might reach fifty years. It is also quite likely that other men, perhaps not so competent as himself, assisted him in his work and blocked out the forms or reduced them to convenient size for him to finish. Such a labor division as Catlin and Sellers affirm existed, enabled the skillful worker in flint to produce a larger number of implements than if he attempted to work his own material from the initial stage to the completed form. His people residing in the same village would avail themselves of his wares, giving him in return food, or implements, or clothing. His surplus stock in all likelihood was sent to a distance to be exchanged with other tribes.

"Such a man may have selected flint of a certain color, so that the product of his labor might be instantly recognized."

Undoubtedly there were individuals in every tribe more skilled than their fellows, and certainly it is highly probable that they did leave their individual impress on the product of their flint shops, as the evidence offered by Moorehead and others proves, yet if all type forms are to be explained in this manner, the arrowpoint can have no story to tell of tribe or racial occupancy of a given area. Where the facts are known from historic times, or otherwise, however, it must be admitted that there are many instances of a type form of arrow being characteristic of a special tribe or culture. In proof of this witness the tri-

angular arrow with no stem found in New York State and taken from known rather recent Iroquois sites. Also witness the triangular arrow of Cherokee and pre-Cherokee territory—as revealed by Harrington's work on the Tennessee River.

In further proof of this idea that the type form at least may reveal a racial or cultural connection there is mentioned the very serrated triangular arrow of the Ft. Ancient Culture.

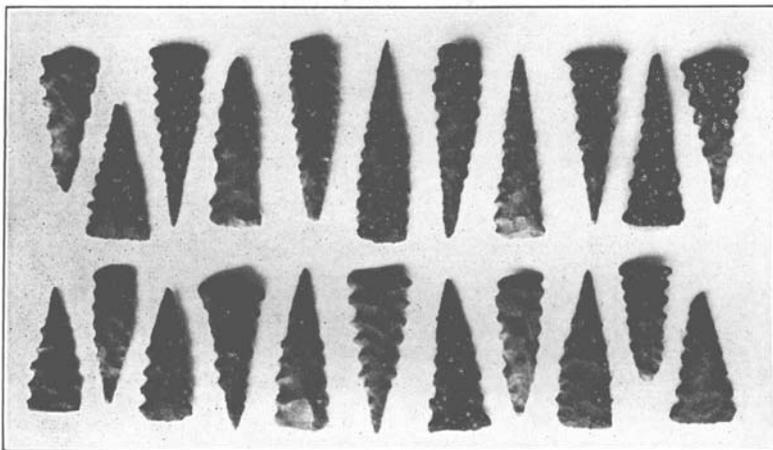


FIG. 115. SERRATED ARROWPOINTS.
Believed to be characteristic of the Fort Ancient Culture.

This is generally accepted as typical of this culture, not being found elsewhere, although it must be admitted that it was by no means the only form of point used by this culture.

Certain it is that many very beautiful forms of arrow points representing types commonly found in Kentucky have at present no known tribal or cultural significance. Whether archaeological investigation will ever be able to discover such relation, if indeed it ever existed, is a matter for future determination. In dealing with this subject it is of course impossible to figure in this report all of the important types found in Kentucky but a few are shown in the accompanying figures which we believe will illustrate the ideas advanced. To undertake to make a systematic study and classification of such artifacts would lead far beyond the scope of this work.

Among all the varied problems presented by the great variety of arrowpoints and their distribution perhaps no problem is more interesting than that suggested by the very small arrowpoints often found in graves, commonly called "bird arrows." What was their purpose? How were they used? Why

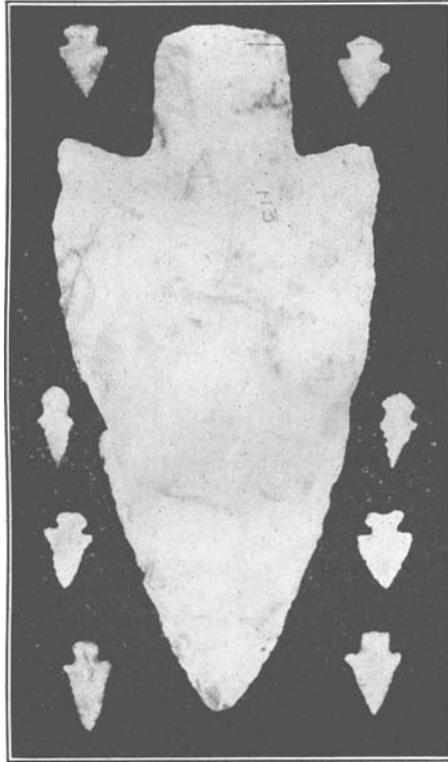


FIG. 116. THE SO-CALLED "BIRD ARROWS."
The spear-head shown for comparison is six inches long.

were they made? They seem to be found in exactly similar forms as the larger arrow points, and generally in association with graves. When found, they are in groups of six or eight or more, which seems to indicate they were part of a sheaf of arrows. It is difficult to understand their purpose—it appears that they were too small to be effective at any great distance. It has been suggested they were used to kill birds, hence the name, bird arrows. This seems hardly reasonable. Again the sug-

gestion has been made that they might have been used in a "blow gun." There seems, however, no actual evidence for this in either history, or archaeology beyond the finding of these small arrows. Figure 116 shows some of these small arrows for comparison with a spear six inches long. Note the similarity in form of the spear, and the point at the lower right hand corner.

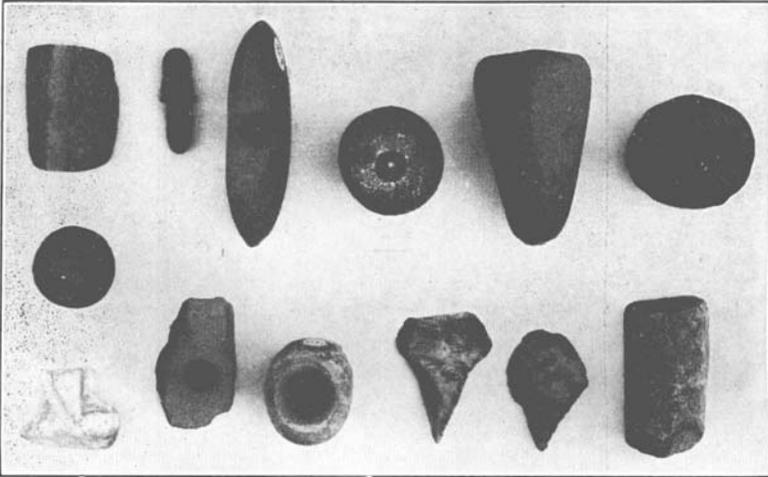


FIG. 117. DRILLED ARTIFACTS.

The first and third specimens were drilled with a reed drill; between them is a "core." The last three specimens in the first row are "drill-heads" for holding the reed. The second and third specimen in the bottom row show conical drilling, and the fourth and fifth are the flint "reamers" used for such drilling.

A very important implement of primitive man was his drill. Certainly he used it to produce fire, as is well known from historic records, but in addition it served the purpose of boring holes in all of the various type of artifacts which required such drilling.

Two quite distinct types of drills were apparently used and for purposes of description these may be termed the "reed drills" and the "flint drills," the former being used to bore a hole which was uniform in diameter and the latter to ream out one which was conical.

The reed drill consisted of a shaft of reed or cane, held in place by a drill-head or hand-hold and was rotated alternately one way and then the other by a bow, or alternately wound

thongs, or other such device. If a solid shaft was used, a cylindrical hole was ground into the stone which was drilled, the hole having straight sides, the same bore all the way down and the bottom smooth and oval unless the hole was cut entirely through the specimen. If, however, the shaft was a section of cane, it would cut a cylindrical hole, with straight sides, but would leave

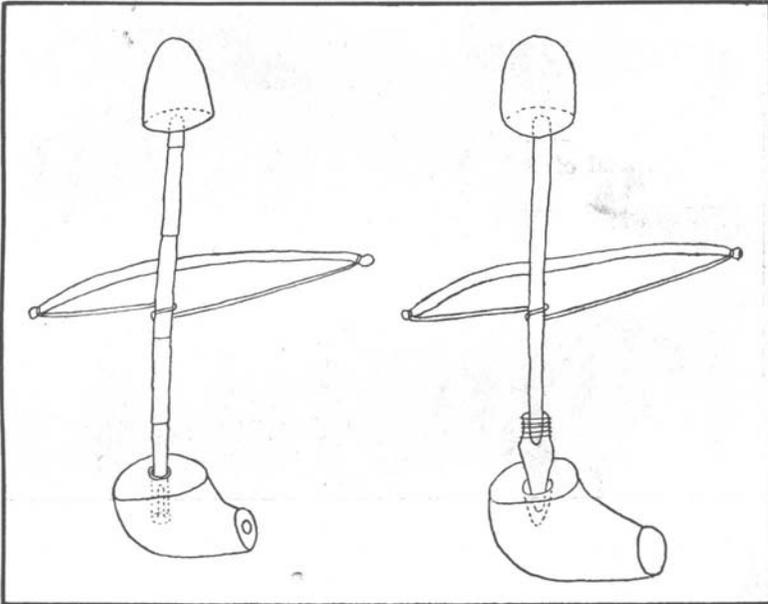


FIG. 118. METHODS OF USING DRILLS.

The "reed drill" is shown on the left and the "flint drill" on the right.

in the center of the hole an undrilled portion or "core." Many artifacts left incomplete show this core and prove that the drill was a cane stalk or equivalent form. At least one such core cut completely out has been found by the authors.

The other type of drill with which we have more particularly to do in this chapter is the flint drill. This was perhaps quite similar to the reed drill, except that the point of the drill was made of flint, specially formed for this purpose. In general, no matter how carefully this flint point was worked, it was necessary that the base of this point should be larger and stronger. The hole made by such drill points was conical rather than cylin-

drical. Occasionally the sides of such holes had so great a slope that the points which made them were really reamers rather than drills.

Figure 118 illustrates these forms of drilling and figure 119 shows a collection of drills of similar form but differing in size. This form is typical of Ft. Ancient Culture.

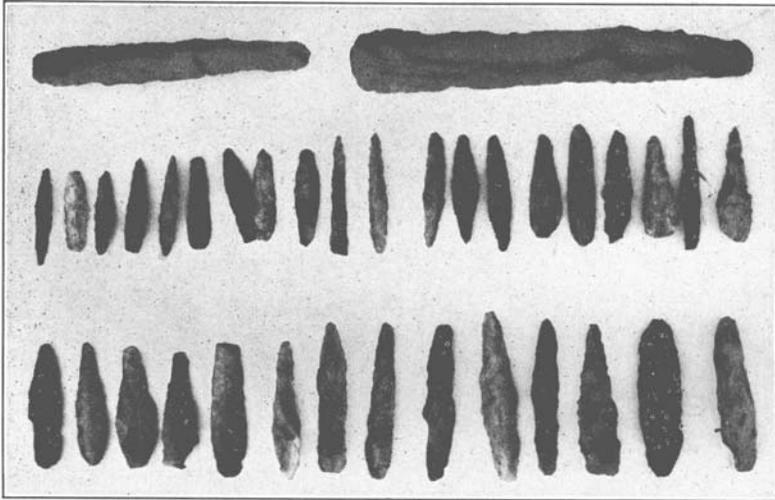


FIG. 119. FLINT DRILLS.

This type of drill is believed to be characteristic of the Fort Ancient Culture.

In general the drill points show a form having an enlarged base for attachment to the shaft, and a long slender point. Some specimens show the result of use, the point having been broken off, and the drill reworked to a new point. Occasionally the base of the drill is notched to facilitate attachment, as shown in figure 120.

The height of the art of flaking flint is probably shown in the manufacture of flint hooks and harpoons. Figure 121 shows a number of unusual forms. The hook may have been used as metal hooks are now used to "gig" fish under the ice or in the muddy bottoms of streams. True fish hooks made of flint are not uncommon in Kentucky. The harpoons show a single or double barb and were apparently very insecurely attached to the shaft in the expectation that they would leave the shaft but carry the cord attached, and hold the fish by the barb.

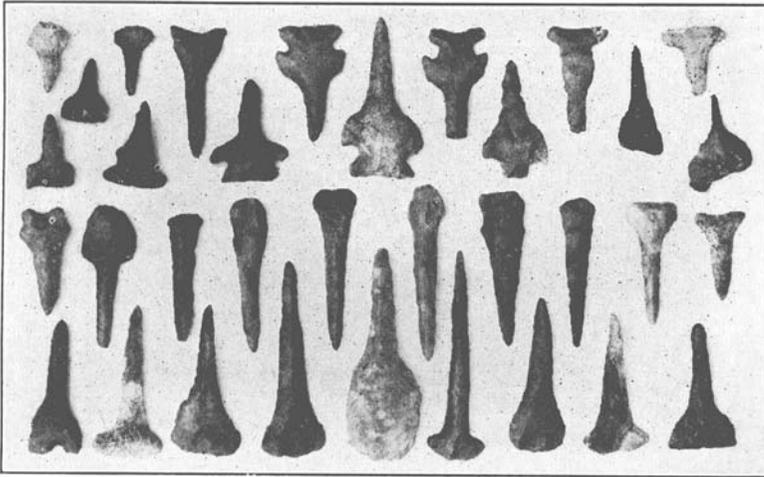


FIG. 120. NOTCHED DRILLS.
Showing bases enlarged for the attachment of a shaft.

The cutting and tanning of animal skins occupied a large place in the life of primitive man. In this process he not only used flint knives, but made another very convenient tool, the so-called "celt." The celt was sometimes chipped from a fairly

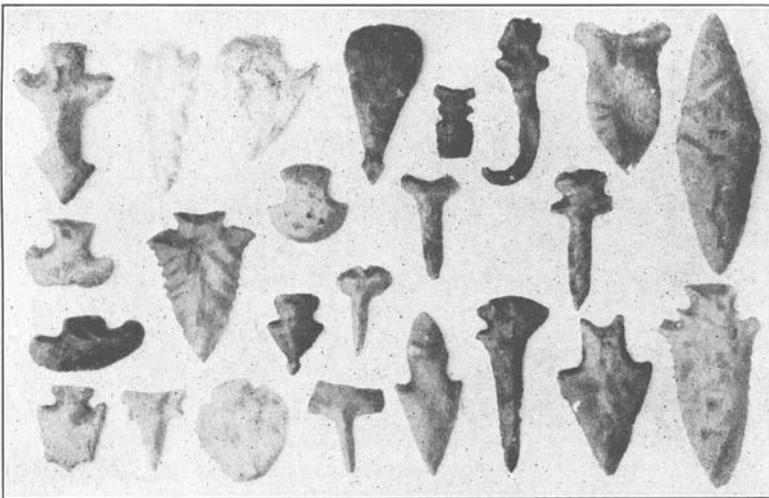


FIG. 121. CURIOUS SHAPES.
Hooks, harpoons, scrapers and scalers made of flint.

large and rather thick section of flint and was used much as the smaller knives are used. In the process of tanning skins, much scraping was necessary to remove surplus tissue, and to soften the skin in the curing process. In this work the celt played a large part. The edge was sharp enough to cut leather if desired, and yet dull enough to make a good scraper.

When flint celts were first made, they were chipped or flaked out roughly, but after long use they became smooth, developing an edge as sharp as is produced by grinding. Figure 122 shows a new celt chipped out, but little used. The other specimens show long usage, and a very high polish. Similar implements were made by grinding and polishing stone, some of which were attached to handles, and used as hand axes. It is not believed that flint celts were hafted. They were never notched nor grooved and show no evidence of being hafted.

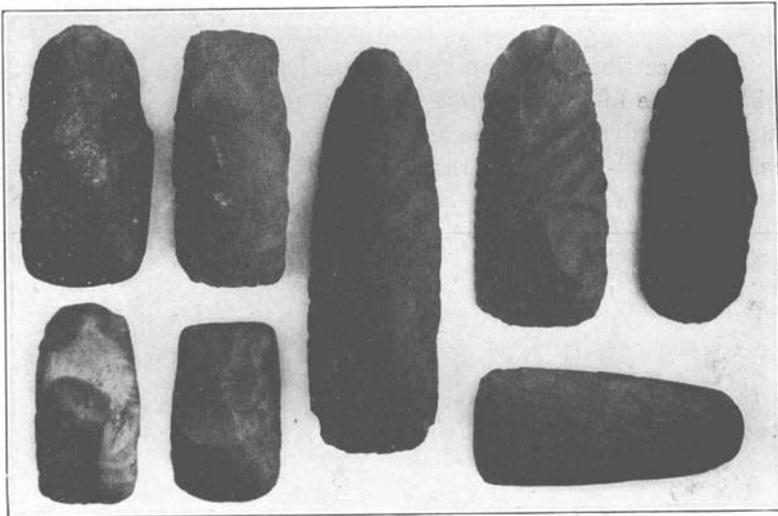


FIG. 122. FLINT CELTS.

Showing newly made specimens and those highly polished by use. The specimen in the lower right-hand corner is coated with hematite.

Besides the celt which was a form of scraper, there were several other smaller forms used for the same purpose. It seems that many arrows when broken at the point, were reworked to a very blunt edge, and used as scrapers. Being small they were probably used attached to the arrow shaft. Scrapers of a size

comparable to arrowpoints were made from original flint flakes. These scrapers were generally pear shaped or oval in form, and quite sharp on one side of the large end.

Figure 123 shows a group of these scrapers, and for comparison a group made from arrow points. These have been

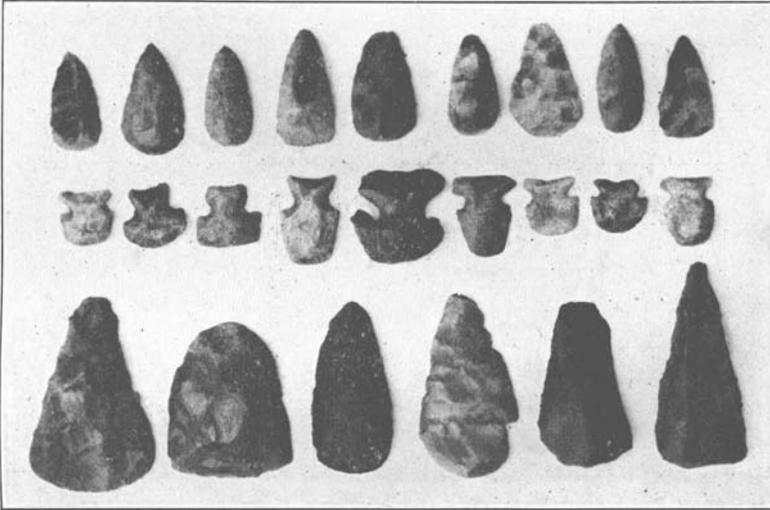


FIG. 123. FLINT SCRAPERS.

Some have evidently been made from arrowpoints and some are believed to have been used to scale fish.

designated by some as "fish scalers" and seem to be most plentiful in village sites near rivers.

Besides these scrapers, many others of larger size and varied form were made from flint flakes. When a flint concretion was broken, the conchoidal fracture gave considerable curvature to the flakes; these were often used to manufacture scrapers, as they were sharp and required but little additional work. Many still retained their original curved surface. The forms of these scrapers are so varied that it is difficult to understand how some of them could have been used. The long, finger-like flint flakes show very careful and accurate chipping, but it is clear that they must have been used in a very different way from the broad sharp blades.

Of all the artifacts left by primitive man, perhaps the hoe speaks most eloquently of village life—a continued occupancy

of one place—and indicates the beginning of agriculture. This step in man's development marked a very important stage. By this means man began to till the soil, and obtain food from the earth by labor, rather than by fishing and hunting. It is to be supposed that he would have developed the art of chipping stone to a high degree before he came to have need for hoes. This seems to be the case, as the flint hoe specially shows a high order of workmanship. Stone hoes were made of both flint and limestone, and used extensively in certain areas of Kentucky.

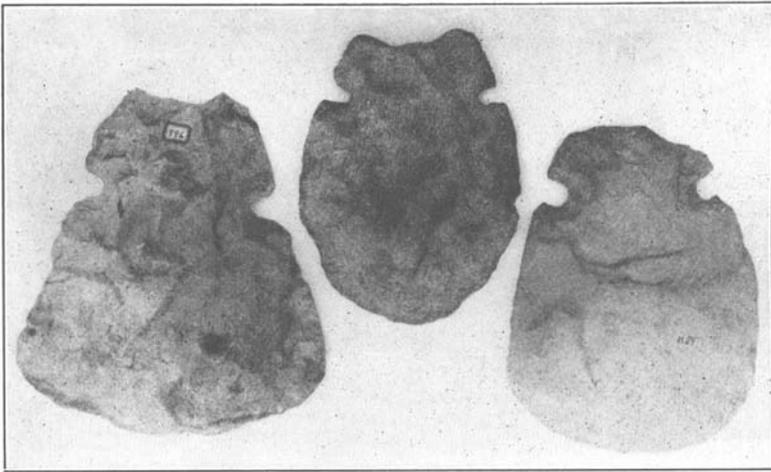


FIG. 124. FLINT HOES.
The notched form found in Western Kentucky.

Flint hoes are quite common in the fields of Western Kentucky, beyond the Tennessee and Cumberland Rivers, and extend into Tennessee, as well as on the other side of the Mississippi River in Missouri and Arkansas. These hoes are generally of three forms, one notched and two unnotched forms. Figure 124 shows several notched hoes from the author's collection. These are generally broader at the cutting edge than at the notch, and were of course attached to a handle more or less crude. Well made hoes of this type show that they were first made by removal of large flint flakes from a large concretion, and then sharpened by fine chipping. As they were used, they took on a very high

polish. In some specimens this polish occurs not only at the edge but spreads over the whole surface.

Of the unnotched varieties there seem to be two different forms. One of these is broad at the edge, the base coming to a point, and while no notch was made, it shows evidence of attachment to a handle. These hoes vary in size from 4 to 10 inches in length. The other type is a general oval in form, the cutting edge being not nearly as broad as the central portion of the hoe. They are much longer than the other forms, and have

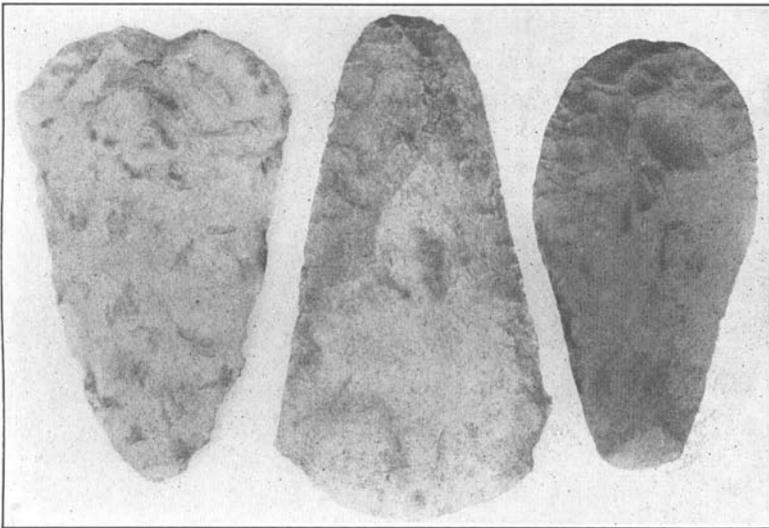


FIG. 125. FLINT HOES.

Of the unnotched type but well made and highly polished.

been reported as long as 19 inches. They rarely exceed $4\frac{1}{2}$ inches in breadth. It has been suggested that some of these specimens show evidence that they were attached to handles which prolonged their length, and were therefore not used as hoes, but rather as spades. This may be correct, and may account for their rather great length, which in such case would be a help in attaching a handle but which if used as a hoe, would probably make the instrument rather cumbersome.

Along the Cumberland River in Southern Kentucky is to be found another type of hoe made by percussion. This hoe is

made of limestone, and is quite crude. The material did not permit flaking like flint, and was therefore hammered from a slab of stone of proper size. Such hoes are never found in the fields, as are the flint specimens of Western Kentucky, for the reason that being of limestone, they weather rapidly, so that in a relatively short time all of the surface polish, and much of their distinguishing form is lost, and if ever seen again they appear in no way different from any other rock in the field.

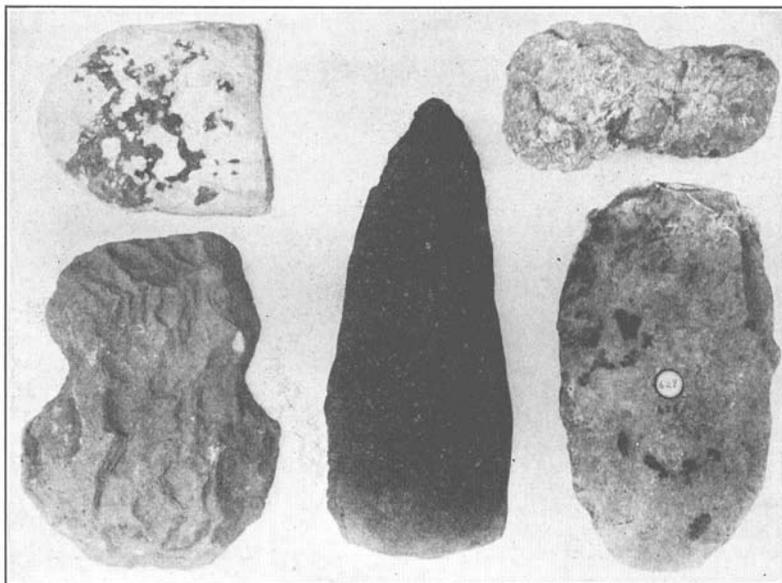


FIG. 126. LIMESTONE HOES.

Some may have had straight handles and have been used as spades.

Primitive man had to go to enough trouble, however, in the manufacture of such hoes to cause him to value them. Where he lived in caves and cliff dwellings, he carried them to his dwelling and many have been found in cracks and fissures in the walls of cliffs and caves, and on shelves of rock, just where they were laid away by their original owners.

In the Hines Cave, at Mill Springs, Wayne County, investigated by the authors, some 40 limestone hoes were discovered in the general digging in the floor of this cavern. While they were generally crude, some of these hoes showed high polish,

the condition of the cavern being such that the limestone suffered no weathering within it. With primitive man, labor such as the use of a hoe involved, was considered degrading, and was therefore left for women to perform. The hoe was therefore the tool of women, and was not held in high esteem. This may account for the fact that while flint hoes are often ploughed up in the fields of Western Kentucky, and the caves of Southern Kentucky

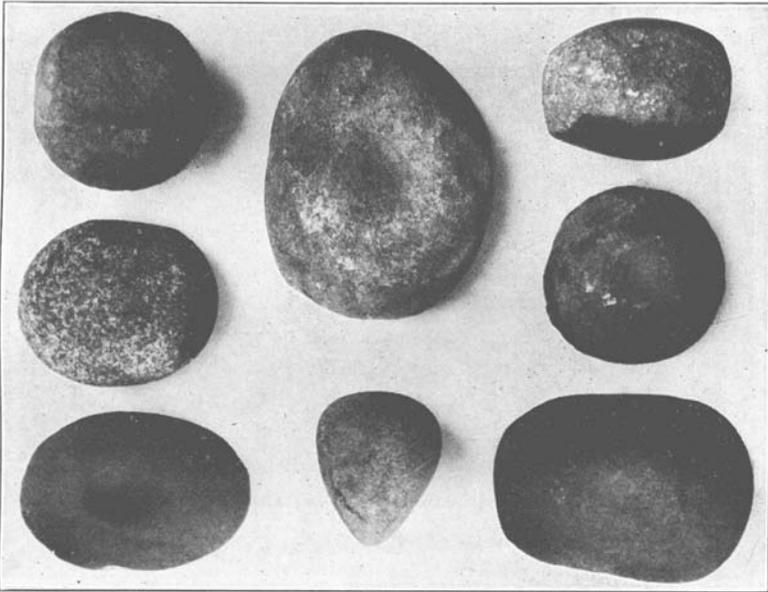


FIG. 127. HAMMERSTONES.

Smoothed by constant handling and indented by long use.

yield many limestone hoes, such artifacts are not generally found in mounds, and cemeteries.

Of all the many hoes found in this state, so far as the authors are aware, only one record exists of hoes being found in connection with graves. This record is from Mr. I. R. Williams, of Union Town, who reports that in opening an Indian grave in that vicinity three large flint hoes were found stuck up on edge about the head of the skeleton. Certainly this was a most unusual situation, and causes one to desire a reasonable explanation. Perhaps this individual was during lifetime a

master of flint chipping, and a maker of hoes. These specimens may have been placed in his grave as a sign of his occupation, rather than as prized possessions suitable for honoring the dead. Certain it is that hoes were not generally regarded as a proper offering for the dead, and are practically never found in association with graves.

In the process of flaking boulders by percussion, not only was the boulder worked by the process of hammering, but the stone used as a hammer showed the result of such usage. The first hammerstones used by primitive man were certainly no more than boulders or broken pieces of rock of convenient size and form. However, as he began to specialize the use of the hammer for various purposes, it became necessary for him actually to manufacture, by rough pecking, hammerstones of convenient form. In general they appear in two types. Those used in direct percussion, and those used in indirect percussion, by hammering a chisel, or bone flaker. Those used in direct percussion are battered by use and generally are worn down to a disk form, the edge being the battered portion. When indirect percussion was used the chisel or flaker by use wore down the central area of the hammer faster than the edge and thus the hammer became pitted. Sometimes these pits were quite deep and often occurred on many sides of the stone. This modification of form actually was a type of slow grinding, the the result of flaking by percussion. Figure 127 shows a number of these forms of hammers produced not by intention, but incident to actual use.

Another type of stone artifacts, made by chipping, is the stone disk. The use to which such disks were placed is problematical. They have generally been regarded as possible game stones. The material may be any stone common to the locality. Figure 128 shows a number of these chipped disks from the Clay Mound. These vary in size from 2 to 5 inches in diameter. They are quite crude, and were left rough, no attempt being discernible to polish them. They were found scattered through the body of the mound in the general digging, but were not so far as observed in association with burials. The authors while investigating the mound on the Singer farm in Scott County, discovered on the top of this mound, which had been practically

destroyed by cultivation, a number of these disks. They were all of limestone, about 3 inches in diameter, and while quite similar in size and form, were very crude.

Similarly shaped disks were found in the Fullerton site, these being chipped from flat river pebbles. It has been suggested that these disks were used in playing a game, similar to

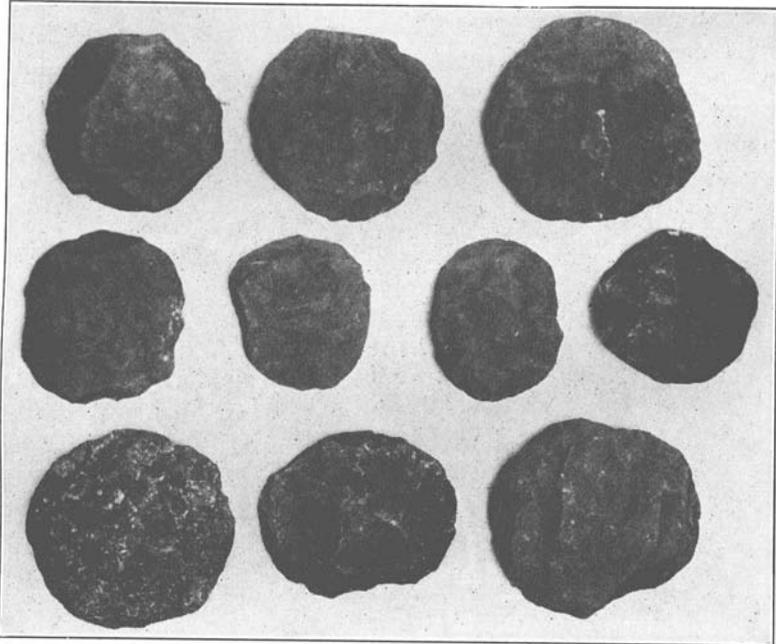


FIG. 128. STONE DISKS.

From the Clay Mound in Nicholas County. These may have been used as "game-stones."

the game played with the highly polished discoidals, but it may be that they were only hammerstones. While their use is unknown, we may at least be reasonably sure that they are always found in quantity, when found at all. They are found only in mounds on or near proven village sites, and never in direct association with burials.

In concluding the discussion on chipped implements of primitive man in Kentucky, it must be accepted that the chipping of stone, like every other acquired art, shows a very marked development from the earlier and very crude implements to the

later and more highly wrought objects. As a man developed in his ability to handle stone by this process, the variety of objects made by him increased, and the more highly specialized forms made their appearance. As he developed skill in his technique in handling flint, he necessarily studied the texture of other stones and their properties of cleavage, and thus developed, perhaps unconsciously, considerable skill as a lapidary. The knowledge of stone properties allowed him to select his material to the best advantage. This knowledge as well as great skill seems to have been necessary to account for the great variety and beauty of chipped stone artifacts found in Kentucky.

